INSTALLATION MANUAL

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NOTES, CAUTIONS AND WARNINGS

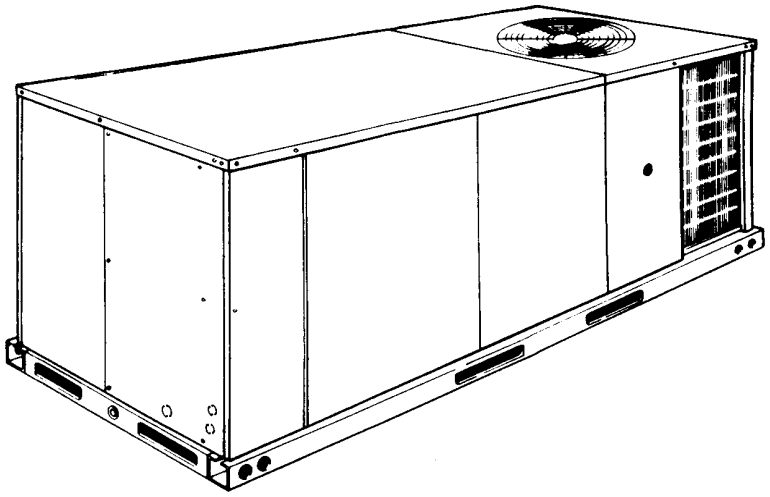
The installer should pay particular attention to the words: *NOTE*, *CAUTION*, and *WARNING*. Notes are intended to clarify or make the installation easier. Cautions are given to prevent equipment damage. Warnings are given to alert installer that personal injury and/or equipment damage may result if installation procedure is not handled properly.

CAUTION: READ ALL SAFETY GUIDES BEFORE YOU BEGIN TO INSTALL YOUR UNIT.

SAVE THIS MANUAL

SUNLINE MAGNUM™ GAS/ELECTRIC SINGLE PACKAGE AIR CONDITIONERS

DJ 036, 048 & 060



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GENERAL

YORK Model DJ units are either single package cooling units equipped with optional factory installed electric heaters, or single package gas-fired central heating furnaces with cooling unit. Both are designed for outdoor installation on a rooftop or slab.

The units are completely assembled on rigid, permanently attached base rails. All piping, refrigerant charge, and electrical wiring is factory installed and tested. The units require electric power, gas connection, duct connections, installation of combustion air inlet hood, flue gas outlet hoods and fixed outdoor air intake damper (units without economizer or motorized damper option only) at the point of installation.

The supplemental electric heaters have nickel-chrome elements and utilize single point power connection.

The gas-fired heaters have aluminized-steel (or optional stainless steel) tubular heat exchangers. The units have spark ignition with proven pilot. All gas heaters are shipped from the factory equipped for natural gas use, but can be field converted to L.P./ Propane with Kit Model # 1NP0440 for single stage and Kit Model # 1NP0485 for 2 stage.

SAFETY CONSIDERATIONS

Due to system pressure, moving parts and electrical components, installation and servicing of air conditioning equipment can be hazardous. Only qualified, trained, service personnel should install, repair, maintain or service this equipment.

Observe all precautions in the literature, on labels and tags accompanying the equipment whenever working on air conditioning equipment. Be sure to follow all other safety precautions that apply.

Wear safety glasses and work gloves, and follow all safety codes. Use a quenching cloth and have a fire extinguisher available for all brazing operations.

⚠WARNING

FIRE OR EXPLOSION HAZARD

Failure to follow safety warnings exactly could result in serious injury, death, or property damage.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

- WHAT TO DO IF YOU SMELL GAS:
  - Do not try to light any appliance.
  - Do not touch any electrical switch; do not use any phone in your building.
  - Leave the building immediately.
  - Immediately call your gas supplier from a neighbor’s phone. Follow the gas supplier’s instructions.
  - If you cannot reach the gas supplier, call the fire department.

- Installation and service must be performed by a qualified installer, service agency or the gas supplier.

INSPECTION

As soon as a unit is received, it should be inspected for possible damage during transit. If damage is evident, the extent of the damage should be noted on the carrier's freight bill. A separate request for inspection by the carrier's agent should be made in writing. Refer to Form 50.15-NM for additional information.

REFERENCE

Additional information is available in the following reference forms:

- Technical Guide - DJ036-060, 036-21687-002
- General Installation - DJ036-060, 170652

RENEWAL PARTS

Contact your local York® parts distribution center for authorized replacement parts.

APPROVALS

Design listed by CSA as follows:

- For use as a cooling unit only with or without optional electric heat.
- For use as a forced air furnace with cooling unit
- For outdoor installation only.
- For installation on combustible material.
- For use with natural gas or propane gas.

⚠ CAUTION

This product must be installed in strict compliance with the enclosed installation instructions and any applicable local, state, and national codes including, but not limited to, building, electrical, and mechanical codes.

⚠WARNING

Improper installation may create a condition where the operation of the product could cause personal injury or property damage.

The installer should pay particular attention to the words: NOTE, CAUTION and WARNING. Notes are intended to clarify or make the installation easier. Cautions are given to prevent equipment damage. Warnings are given to alert installer that personal injury and/or equipment damage may result if installation procedure is not handled properly.

PRODUCT NOMENCLATURE

3-5 Ton Sunline Magnum™ Model Number Nomenclature

D	J	036	N04	N	2	A	AA	1

Product Category
D = Air Cond., Single Pkg, R-22

Product Identifier
J = Ultra Efficiency - Belt Drive Only

Nominal Cooling Capacity - MBH
036 = 3 Ton
048 = 4 Ton
060 = 5 Ton

Heat Type & Nominal Heat Capacity
C00 = Cooling Only. Suitable for field installed electric heat

Gas Heat Options
N04 = 40 MBH Output Aluminized Steel, 1 Stage (036)
N06 = 60 MBH Output Aluminized Steel, 1 Stage (048)
N08 = 80 MBH Output Aluminized Steel, 1 Stage (036,060,072)
N10 = 100 MBH Output Aluminized Steel ,1 Stage (048,060,072)
D06 = 60 MBH Output Aluminized Steel, 2 Stage (036,048,060,072)
D10 = 100 MBH Output Aluminized Steel, 2 Stage (036*,048,060,072)
S04 = 40 MBH Output Stainless Steel, 1 Stage (036)
S06 = 60 MBH Output Stainless Steel, 1 Stage (048)
S08 = 80 MBH Output Stainless Steel, 1 Stage (036,060,072)
S10 = 100 MBH Output Stainless Steel, 1 Stage (048,060,072)
T06 = 60 MBH Output Stainless Steel, 2 Stage (036,048,060,072)
T10 = 100 MBH Output Stainless Steel, 2 Stage (036*,048,060,072)

Electric Heat Options
E05 = 5 KW Electric Heat
E07 = 7 KW Electric Heat
E10 = 10 KW Electric Heat
E15 = 15 KW Electric Heat
E20 = 20 KW Electric Heat
E30 = 30 KW Electric Heat

*** (D, T) 10 = 92 MBH Output on 036 Models**

Airflow
N = Belt Drive
P = Belt Drive/Single Input Econo
R = Belt Drive/Motorized Damper
Y = Belt Drive/BAS Ready Econ (No BAS Controller) w/2" Pleated Filters

Voltage
1 = 208/230-1-60
2 = 208/230-3-60
4 = 460-3-60
5 = 575-3-60

Installation Options
A = No Options Installed
B = Option 1
C = Option 2
D = Options 1 & 2
E = Option 3
F = Option 4
G = Options 1 & 3
H = Options 1 & 4
J = Options 1, 2 & 3
K = Options 1, 2, & 4
L = Options 1,3 & 4
M = Options 1, 2, 3, & 4
N = Options 2 & 3
P = Options 2 & 4
Q = Options 2, 3, & 4
R = Options 3 & 4
S = Option 5
T = Options 1 & 5
U = Options 1, 3, & 5
V = Options 1, 4, & 5
W = Options 1, 3, 4, & 5
X = Options 3 & 5
Y = Options 4 & 5
Z = Options 3, 4, & 5

Options
1 = Disconnect
2 = Non-Pwr'd Conv Oultet
3 = Smoke Detector S.A.
4 = Smoke Detector R.A.
5 = Pwr'd Conv. Outlet

Product Generation
1 = First Generation

Additional Options
(See Next Page)

3-6T Sunline Model Number Nomenclature

Standard Cabinet	
AA	None
AB	Phase Monitor
AC	Coil Guard
AD	Dirty Filter Switch
AE	Phase Monitor & Coil Guard
AF	Phase Monitor & Dirty Filter Switch
AG	Coil Guard & Dirty Filter Switch
AH	Phase Monitor, Coil Guard, & Dirty Filter Switch
AJ	SS Drain Pan
AK	SS Drain Pan & Phase Monitor
AL	SS Drain Pan & Coil Guard
AM	SS Drain Pan & Dirty Filter Switch
AN	SS Drain Pan, Phase Monitor, Coil Guard & Dirty Filter Switch
AS	Bottom Drain Connection
CA	CPC Controller with Dirty Filter Switch & Air Proving Switch
CB	CPC Controller, DFS, APS & Phase Monitor
CC	CPC Controller, DFS, APS & Coil Guard
CD	CPC Controller, DFS, APS, Phase Monitor, & Coil Guard
CE	CPC Controller, DFS, APS & Technicoat Cond. Coil
CF	CPC Controller, DFS, APS, Technicoat Cond. Coil, & Phase Monitor
CG	CPC Controller, DFS, APS, Technicoat Cond. Coil, & Coil Guard
CH	CPC Controller, DFS, APS, Technicoat Cond. Coil, Phase Monitor, & Coil Guard
CJ	CPC Controller, DFS, APS & Technicoat Evap. Coil
CK	CPC Controller, DFS, APS, Technicoat Evap. Coil, & Phase Monitor
CL	CPC Controller, DFS, APS, Technicoat Evap. Coil, & Coil Guard
CM	CPC Controller, DFS, APS, Technicoat Evap. Coil, Phase Monitor, & Coil Guard
CN	CPC Controller, DFS, APS & Technicoat Evap. & Cond Coils
CP	CPC Controller, DFS, APS, Technicoat Evap. & Cond Coils, & Phase Monitor
CQ	CPC Controller, DFS, APS, Technicoat Evap. & Cond Coils, & Coil Guard
CR	CPC Controller, DFS, APS, Technicoat Evap. & Cond Coils, Phase Monitor, & Coil Guard
CS	CPC Controller, DFS, APS, SS Drain Pan
CT	CPC Controller, DFS, APS, SS Drain Pan, Phase Monitor, & Coil Guard
CU	CPC Controller, DFS, APS, SS Drain Pan, & Technicoat Cond Coils
CV	CPC Controller, DFS, APS, SS Drain Pan, & Technicoat Evap Coil
CW	CPC Controller, DFS, APS, SS Drain Pan, & Technicoat Evap and Cond Coils
CX	CPC Controller, DFS, APS, SS Drain Pan, Phase Monitor, Coil Guard, & Technicoat Evap and Cond Coils
JA	Johnson UNT Controller with Dirty Filter Switch & Air Proving Switch
JB	Johnson UNT Controller, DFS, APS & Phase Monitor
JC	Johnson UNT Controller, DFS, APS & Coil Guard
JD	Johnson UNT Controller, DFS, APS, Phase Monitor, & Coil Guard
JE	Johnson UNT Controller, DFS, APS & Technicoat Cond. Coil
JF	Johnson UNT Controller, DFS, APS, Technicoat Cond. Coil, & Phase Monitor
JG	Johnson UNT Controller, DFS, APS, Technicoat Cond. Coil, & Coil Guard
JH	Johnson UNT Controller, DFS, APS, Technicoat Cond. Coil, Phase Monitor, & Coil Guard
JJ	Johnson UNT Controller, DFS, APS & Technicoat Evap. Coil
JK	Johnson UNT Controller, DFS, APS, Technicoat Evap. Coil, & Phase Monitor
JL	Johnson UNT Controller, DFS, APS, Technicoat Evap. Coil, & Coil Guard
JM	Johnson UNT Controller, DFS, APS, Technicoat Evap. Coil, Phase Monitor, & Coil Guard
JN	Johnson UNT Controller, DFS, APS & Technicoat Evap. & Cond Coils
JP	Johnson UNT Controller, DFS, APS, Technicoat Evap. & Cond Coils, & Phase Monitor
JQ	Johnson UNT Controller, DFS, APS, Technicoat Evap. & Cond Coils, & Coil Guard
JR	Johnson UNT Controller, DFS, APS, Technicoat Evap. & Cond Coils, Phase Monitor, & Coil Guard

Standard Cabinet	
JS	Johnson UNT Controller, DFS, APS, SS Drain Pan
JT	Johnson UNT Controller, DFS, APS, SS Drain Pan, Phase Monitor, & Coil Guard
JU	Johnson UNT Controller, DFS, APS, SS Drain Pan, & Technicoat Cond Coils
JV	Johnson UNT Controller, DFS, APS, SS Drain Pan, & Technicoat Evap Coil
JW	Johnson UNT Controller, DFS, APS, SS Drain Pan, & Technicoat Evap and Cond Coils
JX	Johnson UNT Controller, DFS, APS, SS Drain Pan, Phase Monitor, Coil Guard, & Technicoat Evap and Cond Coils
HA	Honeywell Excel 10 Controller with Dirty Filter Switch & Air Proving Switch
HB	Honeywell Excel 10 Controller, DFS, APS & Phase Monitor
HC	Honeywell Excel 10 Controller, DFS, APS & Coil Guard
HD	Honeywell Excel 10 Controller, DFS, APS, Phase Monitor, & Coil Guard
HE	Honeywell Excel 10 Controller, DFS, APS & Technicoat Cond. Coil
HF	Honeywell Excel 10 Controller, DFS, APS, Technicoat Cond. Coil, & Phase Monitor
HG	Honeywell Excel 10 Controller, DFS, APS, Technicoat Cond. Coil, & Coil Guard
HH	Honeywell Excel 10 Controller, DFS, APS, Technicoat Cond. Coil, Phase Monitor, & Coil Guard
HJ	Honeywell Excel 10 Controller, DFS, APS & Technicoat Evap. Coil
HK	Honeywell Excel 10 Controller, DFS, APS, Technicoat Evap. Coil, & Phase Monitor
HL	Honeywell Excel 10 Controller, DFS, APS, Technicoat Evap. Coil, & Coil Guard
HM	Honeywell Excel 10 Controller, DFS, APS, Technicoat Evap. Coil, Phase Monitor, & Coil Guard
HN	Honeywell Excel 10 Controller, DFS, APS & Technicoat Evap. & Cond Coils
HP	Honeywell Excel 10 Controller, DFS, APS, Technicoat Evap. & Cond Coils, & Phase Monitor
HQ	Honeywell Excel 10 Controller, DFS, APS, Technicoat Evap. & Cond Coils, & Coil Guard
HR	Honeywell Excel 10 Controller, DFS, APS, Technicoat Evap. & Cond Coils, Phase Monitor, & Coil Guard
HS	Honeywell Excel 10 Controller, DFS, APS, SS Drain Pan
HT	Honeywell Excel 10 Controller, DFS, APS, SS Drain Pan, Phase Monitor, & Coil Guard
HU	Honeywell Excel 10 Controller, DFS, APS, SS Drain Pan, & Technicoat Cond Coils
HV	Honeywell Excel 10 Controller, DFS, APS, SS Drain Pan, & Technicoat Evap Coil
HW	Honeywell Excel 10 Controller, DFS, APS, SS Drain Pan, & Technicoat Evap and Cond Coils
HX	Honeywell Excel 10 Controller, DFS, APS, SS Drain Pan, Phase Monitor, Coil Guard, & Technicoat Evap and Cond Coils
NA	Novar ETC-3 Controller with Dirty Filter Switch & Air Proving Switch
NB	Novar ETC-3 Controller, DFS, APS & Phase Monitor
NC	Novar ETC-3 Controller, DFS, APS & Coil Guard
ND	Novar ETC-3 Controller, DFS, APS, Phase Monitor, & Coil Guard
NE	Novar ETC-3 Controller, DFS, APS & Technicoat Cond. Coil
NF	Novar ETC-3 Controller, DFS, APS, Technicoat Cond. Coil, & Phase Monitor
NG	Novar ETC-3 Controller, DFS, APS, Technicoat Cond. Coil, & Coil Guard
NH	Novar ETC-3 Controller, DFS, APS, Technicoat Cond. Coil, Phase Monitor, & Coil Guard
NJ	Novar ETC-3 Controller, DFS, APS & Technicoat Evap. Coil
NK	Novar ETC-3 Controller, DFS, APS, Technicoat Evap. Coil, & Phase Monitor
NL	Novar ETC-3 Controller, DFS, APS, Technicoat Evap. Coil, & Coil Guard
NM	Novar ETC-3 Controller, DFS, APS, Technicoat Evap. Coil, Phase Monitor, & Coil Guard
NN	Novar ETC-3 Controller, DFS, APS & Technicoat Evap. & Cond Coils
NP	Novar ETC-3 Controller, DFS, APS, Technicoat Evap. & Cond Coils, & Phase Monitor
NQ	Novar ETC-3 Controller, DFS, APS, Technicoat Evap. & Cond Coils, & Coil Guard
NR	Novar ETC-3 Controller, DFS, APS, Technicoat Evap. & Cond Coils, Phase Monitor, & Coil Guard
NS	Novar ETC-3 Controller, DFS, APS, SS Drain Pan
NT	Novar ETC-3 Controller, DFS, APS, SS Drain Pan, Phase Monitor, & Coil Guard
NU	Novar ETC-3 Controller, DFS, APS, SS Drain Pan, & Technicoat Cond Coils
NV	Novar ETC-3 Controller, DFS, APS, SS Drain Pan, & Technicoat Evap Coil
NW	Novar ETC-3, DFS, APS, SS Drain Pan, & Technicoat Evap and Cond Coils
NX	Novar ETC-3 Controller, DFS, APS, SS Drain Pan, Phase Monitor, Coil Guard, & Technicoat Evap and Cond Coils
TA	Technicoat Condenser Coil
TB	Technicoat Condenser Coil & Phase Monitor
TC	Technicoat Condenser Coil & Coil Guard
TD	Technicoat Condenser Coil & Dirty Filter Switch

Standard Cabinet	
TE	Technicoat Condenser Coil, Phase Monitor, & Coil Guard
TF	Technicoat Condenser Coil, Phase Monitor, & Dirty Filter Switch
TG	Technicoat Condenser Coil, Coil Guard, & Dirty Filter Switch
TH	Technicoat Condenser Coil, Phase Monitor, Coil Guard, & Dirty Filter Switch
TJ	Technicoat Evaporator Coil
TK	Technicoat Evaporator Coil & Phase Monitor
TL	Technicoat Evaporator Coil & Coil Guard
TM	Technicoat Evaporator Coil & Dirty Filter Switch
TN	Technicoat Evaporator Coil, Phase Monitor, & Coil Guard
TP	Technicoat Evaporator Coil, Phase Monitor, & Dirty Filter Switch
TQ	Technicoat Evaporator Coil, Coil Guard, & Dirty Filter Switch
TR	Technicoat Evaporator Coil, Phase Monitor, Coil Guard, & Dirty Filter Switch
TS	Technicoat Evaporator & Condenser Coils
TT	Technicoat Evaporator & Condenser Coils & Phase Monitor
TU	Technicoat Evaporator & Condenser Coils & Coil Guard
TV	Technicoat Evaporator & Condenser Coils & Dirty Filter Switch
TW	Technicoat Evaporator & Condenser Coils, Phase Monitor, & Coil Guard
TX	Technicoat Evaporator & Condenser Coils, Phase Monitor, & Dirty Filter Switch
TY	Technicoat Evaporator & Condenser Coils, Coil Guard, & Dirty Filter Switch
TZ	Technicoat Evaporator & Condenser Coils, Phase Monitor, Coil Guard, & Dirty Filter Switch
T1	Technicoat Condenser & SS Drain Pan
T3	Technicoat Condenser Coil, SS Drain Pan, Phase Monitor, Coil Guard, & Dirty Filter Switch
T4	Technicoat Evaporator & SS Drain Pan
T6	Technicoat Evaporator Coil, SS Drain Pan, Phase Monitor, Coil Guard, & Dirty Filter Switch
T7	Technicoat Evaporator & Condenser Coils & SS Drain Pan
T9	Technicoat Evaporator & Condenser Coils, SS Drain Pan, Phase Monitor, Coil Guard, & Dirty Filter Switch
LA	Simplicity Intelli-Comfort Controller
LB	Simplicity Intelli-Comfort Controller, & Phase Monitor
LC	Simplicity Intelli-Comfort Controller, & Coil Guard
LD	Simplicity Intelli-Comfort Controller, Phase Monitor, & Coil Guard
LE	Simplicity Intelli-Comfort Controller, & Technicoat Cond. Coil
LF	Simplicity Intelli-Comfort Controller, Technicoat Cond. Coil, & Phase Monitor
LG	Simplicity Intelli-Comfort Controller, Technicoat Cond. Coil, & Coil Guard
LH	Simplicity Intelli-Comfort Controller, Technicoat Cond. Coil, Phase Monitor, & Coil Guard
LJ	Simplicity Intelli-Comfort Controller, & Technicoat Evap. Coil
LK	Simplicity Intelli-Comfort Controller, Technicoat Evap. Coil, & Phase Monitor
LL	Simplicity Intelli-Comfort Controller, Technicoat Evap. Coil, & Coil Guard
LM	Simplicity Intelli-Comfort Controller, Technicoat Evap. Coil, Phase Monitor, & Coil Guard
LN	Simplicity Intelli-Comfort Controller, & Technicoat Evap. & Cond Coils
LP	Simplicity Intelli-Comfort Controller, Technicoat Evap. & Cond Coils, & Phase Monitor
LQ	Simplicity Intelli-Comfort Controller, Technicoat Evap. & Cond Coils, & Coil Guard
LR	Simplicity Intelli-Comfort Controller, Technicoat Evap. & Cond Coils, Phase Monitor, & Coil Guard
LS	Simplicity Intelli-Comfort Controller, SS Drain Pan
LT	Simplicity Intelli-Comfort Controller, SS Drain Pan, Phase Monitor, & Coil Guard
LU	Simplicity Intelli-Comfort Controller, SS Drain Pan, & Technicoat Cond Coils
LV	Simplicity Intelli-Comfort Controller, SS Drain Pan, & Technicoat Evap Coil
LW	Simplicity Intelli-Comfort Controller, SS Drain Pan, & Technicoat Evap and Cond Coils
LX	Simplicity Intelli-Comfort Controller, SS Drain Pan, Phase Monitor, Coil Guard, & Technicoat Evap and Cond Coils
WA	Intelli-Comfort w/Mod Link Controller
WB	Intelli-Comfort w/Mod Link Controller, & Phase Monitor
WC	Intelli-Comfort w/Mod Link Controller, & Coil Guard
WD	Intelli-Comfort w/Mod Link Controller, Phase Monitor, & Coil Guard
WE	Intelli-Comfort w/Mod Link Controller, & Technicoat Cond. Coil
WF	Intelli-Comfort w/Mod Link Controller, Technicoat Cond. Coil, & Phase Monitor

Standard Cabinet	
WG	Intelli-Comfort w/Mod Link Controller, Technicoat Cond. Coil, & Coil Guard
WH	Intelli-Comfort w/Mod Link Controller, Technicoat Cond. Coil, Phase Monitor, & Coil Guard
WJ	Intelli-Comfort w/Mod Link Controller, & Technicoat Evap. Coil
WK	Intelli-Comfort w/Mod Link Controller, Technicoat Evap. Coil, & Phase Monitor
WL	Intelli-Comfort w/Mod Link Controller, Technicoat Evap. Coil, & Coil Guard
WM	Intelli-Comfort w/Mod Link Controller, Technicoat Evap. Coil, Phase Monitor, & Coil Guard
WN	Intelli-Comfort w/Mod Link Controller, & Technicoat Evap. & Cond Coils
WP	Intelli-Comfort w/Mod Link Controller, Technicoat Evap. & Cond Coils, & Phase Monitor
WQ	Intelli-Comfort w/Mod Link Controller, Technicoat Evap. & Cond Coils, & Coil Guard
WR	Intelli-Comfort w/Mod Link Controller, Technicoat Evap. & Cond Coils, Phase Monitor, & Coil Guard
WS	Intelli-Comfort w/Mod Link Controller, SS Drain Pan
WT	Intelli-Comfort w/Mod Link Controller, SS Drain Pan, Phase Monitor, & Coil Guard
WU	Intelli-Comfort w/Mod Link Controller, SS Drain Pan, & Technicoat Cond Coils
WV	Intelli-Comfort w/Mod Link Controller, SS Drain Pan, & Technicoat Evap Coil
WW	Intelli-Comfort w/Mod Link Controller, SS Drain Pan, & Technicoat Evap and Cond Coils
WX	Intelli-Comfort w/Mod Link Controller, SS Drain Pan, Phase Monitor, Coil Guard, & Technicoat Evap and Cond Coils

Hinged Filter Door & Toolless Access Cabinet	
BA	Hinged Filter Door & Toolless Access Panels
BB	Phase Monitor, Hinged Filter Door & Toolless Access Panels
BC	Coil Guard, Hinged Filter Door & Toolless Access Panels
BD	Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
BE	Phase Monitor & Coil Guard, Hinged Filter Door & Toolless Access Panels
BF	Phase Monitor & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
BG	Coil Guard & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
BH	Phase Monitor, Coil Guard, & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
BJ	SS Drain Pan & Hinged Filter Door & Toolless Access Panels
BK	SS Drain Pan & Phase Monitor, Hinged Filter Door & Toolless Access Panels
BL	SS Drain Pan & Coil Guard, Hinged Filter Door & Toolless Access Panels
BM	SS Drain Pan & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
BN	SS Drain Pan & Phase Monitor & Coil Guard, Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
BS	Bottom Drain Connection, Hinged Filter Door & Toolless Access Panels
DA	CPC Controller with Dirty Filter Switch & Air Proving Switch, Hinged Filter Door & Toolless Access Panels
DB	CPC Controller, DFS, APS & Phase Monitor, Hinged Filter Door & Toolless Access Panels
DC	CPC Controller, DFS, APS & Coil Guard, Hinged Filter Door & Toolless Access Panels
DD	CPC Controller, DFS, APS, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
DE	CPC Controller, DFS, APS & Technicoat Cond. Coil, Hinged Filter Door & Toolless Access Panels
DF	CPC Controller, DFS, APS, Technicoat Cond. Coil, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
DG	CPC Controller, DFS, APS, Technicoat Cond. Coil, & Coil Guard, Hinged Filter Door & Toolless Access Panels
DH	CPC Controller, DFS, APS, Technicoat Cond. Coil, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
DJ	CPC Controller, DFS, APS & Technicoat Evap. Coil, Hinged Filter Door & Toolless Access Panels
DK	CPC Controller, DFS, APS, Technicoat Evap. Coil, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
DL	CPC Controller, DFS, APS, Technicoat Evap. Coil, & Coil Guard, Hinged Filter Door & Toolless Access Panels
DM	CPC Controller, DFS, APS, Technicoat Evap. Coil, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
DN	CPC Controller, DFS, APS & Technicoat Evap. & Cond Coils, Hinged Filter Door & Toolless Access Panels
DP	CPC Controller, DFS, APS, Technicoat Evap. & Cond Coils, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
DQ	CPC Controller, DFS, APS, Technicoat Evap. & Cond Coils, & Coil Guard, Hinged Filter Door & Toolless Access Panels
DR	CPC Controller, DFS, APS, Technicoat Evap. & Cond Coils, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
DS	CPC Controller, DFS, APS, SS Drain Pan Hinged Filter Door & Toolless Access Panels
DT	CPC Controller, DFS, APS, SS Drain Pan, Phase Monitor, & Coil Guard Hinged Filter Door & Toolless Access Panels
DU	CPC Controller, DFS, APS, SS Drain Pan, & Technicoat Cond Coils Hinged Filter Door & Toolless Access Panels
DV	CPC Controller, DFS, APS, SS Drain Pan, & Technicoat Evap Coil Hinged Filter Door & Toolless Access Panels
DW	CPC Controller, DFS, APS, SS Drain Pan, & Technicoat Evap and Cond Coils Hinged Filter Door & Toolless Access Panels

Hinged Filter Door & Toolless Access Cabinet	
DX	CPC Controller, DFS, APS, SS Drain Pan, Phase Monitor, Coil Guard, & Technicoat Evap and Cond Coils Hinged Filter Door & Toolless Access Panels
EA	Johnson UNT Controller with Dirty Filter Switch & Air Proving Switch, Hinged Filter Door & Toolless Access Panels
EB	Johnson UNT Controller, DFS, APS & Phase Monitor, Hinged Filter Door & Toolless Access Panels
EC	Johnson UNT Controller, DFS, APS & Coil Guard, Hinged Filter Door & Toolless Access Panels
ED	Johnson UNT Controller, DFS, APS, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
EE	Johnson UNT Controller, DFS, APS & Technicoat Cond. Coil, Hinged Filter Door & Toolless Access Panels
EF	Johnson UNT Controller, DFS, APS, Technicoat Cond. Coil, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
EG	Johnson UNT Controller, DFS, APS, Technicoat Cond. Coil, & Coil Guard, Hinged Filter Door & Toolless Access Panels
EH	Johnson UNT Controller, DFS, APS, Technicoat Cond. Coil, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
EJ	Johnson UNT Controller, DFS, APS & Technicoat Evap. Coil, Hinged Filter Door & Toolless Access Panels
EK	Johnson UNT Controller, DFS, APS, Technicoat Evap. Coil, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
EL	Johnson UNT Controller, DFS, APS, Technicoat Evap. Coil, & Coil Guard, Hinged Filter Door & Toolless Access Panels
EM	Johnson UNT Controller, DFS, APS, Technicoat Evap. Coil, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
EN	Johnson UNT Controller, DFS, APS & Technicoat Evap. & Cond Coils, Hinged Filter Door & Toolless Access Panels
EP	Johnson UNT Controller, DFS, APS, Technicoat Evap. & Cond Coils, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
EQ	Johnson UNT Controller, DFS, APS, Technicoat Evap. & Cond Coils, & Coil Guard, Hinged Filter Door & Toolless Access Panels
ER	Johnson UNT Controller, DFS, APS, Technicoat Evap. & Cond Coils, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
ES	Johnson UNT Controller, DFS, APS, SS Drain Pan Hinged Filter Door & Toolless Access Panels
ET	Johnson UNT Controller, DFS, APS, SS Drain Pan, Phase Monitor, & Coil Guard Hinged Filter Door & Toolless Access Panels
EU	Johnson UNT Controller, DFS, APS, SS Drain Pan, & Technicoat Cond Coils Hinged Filter Door & Toolless Access Panels
EV	Johnson UNT Controller, DFS, APS, SS Drain Pan, & Technicoat Evap Coil Hinged Filter Door & Toolless Access Panels
EW	Johnson UNT Controller, DFS, APS, SS Drain Pan, & Technicoat Evap and Cond Coils Hinged Filter Door & Toolless Access Panels
EX	Johnson UNT Controller, DFS, APS, SS Drain Pan, Phase Monitor, Coil Guard, & Technicoat Evap and Cond Coils Hinged Filter Door & Toolless Access Panels
GA	Honeywell Excel 10 Controller with Dirty Filter Switch & Air Proving Switch, Hinged Filter Door & Toolless Access Panels
GB	Honeywell Excel 10 Controller, DFS, APS & Phase Monitor, Hinged Filter Door & Toolless Access Panels
GC	Honeywell Excel 10 Controller, DFS, APS & Coil Guard, Hinged Filter Door & Toolless Access Panels
GD	Honeywell Excel 10 Controller, DFS, APS, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
GE	Honeywell Excel 10 Controller, DFS, APS & Technicoat Cond. Coil, Hinged Filter Door & Toolless Access Panels
GF	Honeywell Excel 10 Controller, DFS, APS, Technicoat Cond. Coil, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
GG	Honeywell Excel 10 Controller, DFS, APS, Technicoat Cond. Coil, & Coil Guard, Hinged Filter Door & Toolless Access Panels
GH	Honeywell Excel 10 Controller, DFS, APS, Technicoat Cond. Coil, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
GJ	Honeywell Excel 10 Controller, DFS, APS & Technicoat Evap. Coil, Hinged Filter Door & Toolless Access Panels
GK	Honeywell Excel 10 Controller, DFS, APS, Technicoat Evap. Coil, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
GL	Honeywell Excel 10 Controller, DFS, APS, Technicoat Evap. Coil, & Coil Guard, Hinged Filter Door & Toolless Access Panels
GM	Honeywell Excel 10 Controller, DFS, APS, Technicoat Evap. Coil, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
GN	Honeywell Excel 10 Controller, DFS, APS & Technicoat Evap. & Cond Coils, Hinged Filter Door & Toolless Access Panels
GP	Honeywell Excel 10 Controller, DFS, APS, Technicoat Evap. & Cond Coils, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
GQ	Honeywell Excel 10 Controller, DFS, APS, Technicoat Evap. & Cond Coils, & Coil Guard, Hinged Filter Door & Toolless Access Panels
GR	Honeywell Excel 10 Controller, DFS, APS, Technicoat Evap. & Cond Coils, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
GS	Honeywell Excel 10 Controller, DFS, APS, SS Drain Pan
GT	Honeywell Excel 10 Controller, DFS, APS, SS Drain Pan, Phase Monitor, & Coil Guard
GU	Honeywell Excel 10 Controller, DFS, APS, SS Drain Pan, & Technicoat Cond Coils
GV	Honeywell Excel 10 Controller, DFS, APS, SS Drain Pan, & Technicoat Evap Coil
GW	Honeywell Excel 10 Controller, DFS, APS, SS Drain Pan, & Technicoat Evap and Cond Coils
GX	Honeywell Excel 10 Controller, DFS, APS, SS Drain Pan, Phase Monitor, Coil Guard, & Technicoat Evap and Cond Coils
PA	Novar ETC-3 Controller with Dirty Filter Switch & Air Proving Switch, Hinged Filter Door & Toolless Access Panels
PB	Novar ETC-3 Controller, DFS, APS & Phase Monitor, Hinged Filter Door & Toolless Access Panels

Hinged Filter Door & Toolless Access Cabinet	
PC	Novar ETC-3 Controller, DFS, APS & Coil Guard, Hinged Filter Door & Toolless Access Panels
PD	Novar ETC-3 Controller, DFS, APS, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
PE	Novar ETC-3 Controller, DFS, APS & Technicoat Cond. Coil, Hinged Filter Door & Toolless Access Panels
PF	Novar ETC-3 Controller, DFS, APS, Technicoat Cond. Coil, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
PG	Novar ETC-3 Controller, DFS, APS, Technicoat Cond. Coil, & Coil Guard, Hinged Filter Door & Toolless Access Panels
PH	Novar ETC-3 Controller, DFS, APS, Technicoat Cond. Coil, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
PJ	Novar ETC-3 Controller, DFS, APS & Technicoat Evap. Coil, Hinged Filter Door & Toolless Access Panels
PK	Novar ETC-3 Controller, DFS, APS, Technicoat Evap. Coil, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
PL	Novar ETC-3 Controller, DFS, APS, Technicoat Evap. Coil, & Coil Guard, Hinged Filter Door & Toolless Access Panels
PM	Novar ETC-3 Controller, DFS, APS, Technicoat Evap. Coil, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
PN	Novar ETC-3 Controller, DFS, APS & Technicoat Evap. & Cond Coils, Hinged Filter Door & Toolless Access Panels
PP	Novar ETC-3 Controller, DFS, APS, Technicoat Evap. & Cond Coils, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
PQ	Novar ETC-3 Controller, DFS, APS, Technicoat Evap. & Cond Coils, & Coil Guard, Hinged Filter Door & Toolless Access Panels
PR	Novar ETC-3 Controller, DFS, APS, Technicoat Evap. & Cond Coils, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
PS	Novar ETC-3 Controller, DFS, APS, SS Drain Pan
PT	Novar ETC-3 Controller, DFS, APS, SS Drain Pan, Phase Monitor, & Coil Guard
PU	Novar ETC-3 Controller, DFS, APS, SS Drain Pan, & Technicoat Cond Coils
PV	Novar ETC-3 Controller, DFS, APS, SS Drain Pan, & Technicoat Evap Coil
PW	Novar ETC-3, DFS, APS, SS Drain Pan, & Technicoat Evap and Cond Coils
PX	Novar ETC-3 Controller, DFS, APS, SS Drain Pan, Phase Monitor, Coil Guard, & Technicoat Evap and Cond Coils
UA	Technicoat Condenser Coil, Hinged Filter Door & Toolless Access Panels
UB	Technicoat Condenser Coil & Phase Monitor, Hinged Filter Door & Toolless Access Panels
UC	Technicoat Condenser Coil & Coil Guard, Hinged Filter Door & Toolless Access Panels
UD	Technicoat Condenser Coil & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
UE	Technicoat Condenser Coil, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
UF	Technicoat Condenser Coil, Phase Monitor, & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
UG	Technicoat Condenser Coil, Coil Guard, & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
UH	Technicoat Condenser Coil, Phase Monitor, Coil Guard, & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
UJ	Technicoat Evaporator Coil, Hinged Filter Door & Toolless Access Panels
UK	Technicoat Evaporator Coil & Phase Monitor, Hinged Filter Door & Toolless Access Panels
UL	Technicoat Evaporator Coil & Coil Guard, Hinged Filter Door & Toolless Access Panels
UM	Technicoat Evaporator Coil & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
UN	Technicoat Evaporator Coil, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
UP	Technicoat Evaporator Coil, Phase Monitor, & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
UQ	Technicoat Evaporator Coil, Coil Guard, & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
UR	Technicoat Evaporator Coil, Phase Monitor, Coil Guard, & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
US	Technicoat Evaporator & Condenser Coils, Hinged Filter Door & Toolless Access Panels
UT	Technicoat Evaporator & Condenser Coils & Phase Monitor, Hinged Filter Door & Toolless Access Panels
UU	Technicoat Evaporator & Condenser Coils & Coil Guard, Hinged Filter Door & Toolless Access Panels
UV	Technicoat Evaporator & Condenser Coils & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
UW	Technicoat Evaporator & Condenser Coils, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
UX	Technicoat Evaporator & Condenser Coils, Phase Monitor, & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
UY	Technicoat Evaporator & Condenser Coils, Coil Guard, & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
UZ	Technicoat Evaporator & Condenser Coils, Phase Monitor, Coil Guard, & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
U1	Technicoat Condenser & SS Drain Pan, Hinged Filter Door & Toolless Access Panels
U3	Technicoat Condenser Coil, SS Drain Pan, Phase Monitor, Coil Guard, & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
U4	Technicoat Evaporator & SS Drain Pan, Hinged Filter Door & Toolless Access Panels
U6	Technicoat Evaporator Coil, SS Drain Pan, Phase Monitor, Coil Guard, & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
U7	Technicoat Evaporator & Condenser Coils & SS Drain Pan, Hinged Filter Door & Toolless Access Panels
U9	Technicoat Evaporator & Condenser Coils, SS Drain Pan, Phase Monitor, Coil Guard, & Dirty Filter Switch, Hinged Filter Door & Toolless Access Panels
QA	Simplicity Intelli-Comfort Controller with Hinged Filter Door & Toolless Access Panels
QB	Simplicity Intelli-Comfort Controller, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
QC	Simplicity Intelli-Comfort Controller, & Coil Guard, Hinged Filter Door & Toolless Access Panels

Hinged Filter Door & Toolless Access Cabinet	
QD	Simplicity Intelli-Comfort Controller, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
QE	Simplicity Intelli-Comfort Controller, & Technicoat Cond. Coil, Hinged Filter Door & Toolless Access Panels
QF	Simplicity Intelli-Comfort Controller, Technicoat Cond. Coil, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
QG	Simplicity Intelli-Comfort Controller, Technicoat Cond. Coil, & Coil Guard, Hinged Filter Door & Toolless Access Panels
QH	Simplicity Intelli-Comfort Controller, Technicoat Cond. Coil, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access
QJ	Simplicity Intelli-Comfort Controller, & Technicoat Evap. Coil, Hinged Filter Door & Toolless Access Panels
QK	Simplicity Intelli-Comfort Controller, Technicoat Evap. Coil, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
QL	Simplicity Intelli-Comfort Controller, Technicoat Evap. Coil, & Coil Guard, Hinged Filter Door & Toolless Access Panels
QM	Simplicity Intelli-Comfort Controller, Technicoat Evap. Coil, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access
QN	Simplicity Intelli-Comfort Controller, & Technicoat Evap. & Cond Coils, Hinged Filter Door & Toolless Access Panels
QP	Simplicity Intelli-Comfort Controller, Technicoat Evap. & Cond Coils, & Phase Monitor, Hinged Filter Door & Toolless Access Pan
QQ	Simplicity Intelli-Comfort Controller, Technicoat Evap. & Cond Coils, & Coil Guard, Hinged Filter Door & Toolless Access Panels
QR	Simplicity Intelli-Comfort Controller, Technicoat Evap. & Cond Coils, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless
QS	Simplicity Intelli-Comfort Controller, SS Drain Pan Hinged Filter Door & Toolless Access Panels
QT	Simplicity Intelli-Comfort Controller, SS Drain Pan, Phase Monitor, & Coil Guard Hinged Filter Door & Toolless Access Panels
QU	Simplicity Intelli-Comfort Controller, SS Drain Pan, & Technicoat Cond Coils Hinged Filter Door & Toolless Access Panels
QV	Simplicity Intelli-Comfort Controller, SS Drain Pan, & Technicoat Evap Coil Hinged Filter Door & Toolless Access Panels
QW	Simplicity Intelli-Comfort Controller, SS Drain Pan, & Technicoat Evap and Cond Coils Hinged Filter Door & Toolless Access Panels
QX	Simplicity Intelli-Comfort Controller, SS Drain Pan, Phase Monitor, Coil Guard, & Technicoat Evap and Cond Coils Hinged Filter Door & Toolless Access Panels
XA	Intelli-Comfort w/Mod Link Controller, Hinged Filter Door & Toolless Access Panels
XB	Intelli-Comfort w/Mod Link Controller, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
XC	Intelli-Comfort w/Mod Link Controller, & Coil Guard, Hinged Filter Door & Toolless Access Panels
XD	Intelli-Comfort w/Mod Link Controller, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access Panels
XE	Intelli-Comfort w/Mod Link Controller, & Technicoat Cond. Coil, Hinged Filter Door & Toolless Access Panels
XF	Intelli-Comfort w/Mod Link Controller, Technicoat Cond. Coil, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
XG	Intelli-Comfort w/Mod Link Controller, Technicoat Cond. Coil, & Coil Guard, Hinged Filter Door & Toolless Access Panels
XH	Intelli-Comfort w/Mod Link Controller, Technicoat Cond. Coil, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access
XJ	Intelli-Comfort w/Mod Link Controller, & Technicoat Evap. Coil, Hinged Filter Door & Toolless Access Panels
XK	Intelli-Comfort w/Mod Link Controller, Technicoat Evap. Coil, & Phase Monitor, Hinged Filter Door & Toolless Access Panels
XL	Intelli-Comfort w/Mod Link Controller, Technicoat Evap. Coil, & Coil Guard, Hinged Filter Door & Toolless Access Panels
XM	Intelli-Comfort w/Mod Link Controller, Technicoat Evap. Coil, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless Access
XN	Intelli-Comfort w/Mod Link Controller, & Technicoat Evap. & Cond Coils, Hinged Filter Door & Toolless Access Panels
XP	Intelli-Comfort w/Mod Link Controller, Technicoat Evap. & Cond Coils, & Phase Monitor, Hinged Filter Door & Toolless Access Pan
XQ	Intelli-Comfort w/Mod Link Controller, Technicoat Evap. & Cond Coils, & Coil Guard, Hinged Filter Door & Toolless Access Panels
XR	Intelli-Comfort w/Mod Link Controller, Technicoat Evap. & Cond Coils, Phase Monitor, & Coil Guard, Hinged Filter Door & Toolless
XS	Intelli-Comfort w/Mod Link Controller, SS Drain Pan Hinged Filter Door & Toolless Access Panels
XT	Intelli-Comfort w/Mod Link Controller, SS Drain Pan, Phase Monitor, & Coil Guard Hinged Filter Door & Toolless Access Panels
XU	Intelli-Comfort w/Mod Link Controller, SS Drain Pan, & Technicoat Cond Coils Hinged Filter Door & Toolless Access Panels
XV	Intelli-Comfort w/Mod Link Controller, SS Drain Pan, & Technicoat Evap Coil Hinged Filter Door & Toolless Access Panels
XW	Intelli-Comfort w/Mod Link Controller, SS Drain Pan, & Technicoat Evap and Cond Coils Hinged Filter Door & Toolless Access Panels
XX	Intelli-Comfort w/Mod Link Controller, SS Drain Pan, Phase Monitor, Coil Guard, & Technicoat Evap and Cond Coils Hinged Filter Door & Toolless Access Panels

INSTALLATION

INSTALLATION SAFETY INFORMATION:

Read these instructions before continuing this appliance installation. This is an outdoor combination heating and cooling unit. The installer must assure that these instructions are made available to the consumer and with instructions to retain them for future reference.

1. Refer to the furnace rating plate for the approved type of gas for this furnace.
2. Install this furnace only in a location and position as specified on page 14 of these instructions.
3. Never test for gas leaks with an open flame. Use commercially available soap solution made specifically for the detection of leaks when checking all connections.

4. Always install furnace to operate within the furnace's intended temperature-rise range with the duct system and within the allowable external static pressure range, as specified on the unit name/rating plate.
5. This equipment is not to be used for temporary heating or cooling of buildings or structures under construction.

⚠WARNING

FIRE OR EXPLOSION HAZARD

Failure to follow the safety warning exactly could result in serious injury, death or property damage.

Never test for gas leaks with an open flame. use a commercially available soap solution made specifically for the detection of leaks to check all connections. A fire or explosion may result causing property damage, personal injury or loss of life.

LIMITATIONS

These units must be installed in accordance with the following national and local safety codes:

In U.S.A.:

- National Electrical Code ANSI/NFPA No. 70.
- National Fuel Gas Code Z223.1.
- Gas-Fired Central Furnace Standard ANSI Z21.47a.
- Local gas utility requirements.

In Canada:

- Current Canadian Electrical Code C22.1.
- Current Gas Installation Codes CSA-B149.1.
- Local plumbing and waste water codes.
- Other applicable local codes.

Refer to the Unit Application Data Table 1 and to the Gas Heat Application Data Table 4.

If components are to be added to a unit to meet local codes, they are to be installed at the dealer's and/or the customer's expense.

Size of unit for proposed installation should be based on heat loss/heat gain calculation made according to the methods of the Air Conditioning Contractors of America (ACCA).

TABLE 1: UNIT APPLICATION DATA (DJ)

UNIT MODEL NUMBER		036	048	060
Voltage Variation, Min. / Max.[1]	208/230	187 / 252		
	460	432 / 504		
	575	540 / 630		
Supply Air CFM, Nom.		1200	1600	2000
Wet Bulb Temperature (ºF) of Air on Evaporator Coil, Min. / Max		57 / 72		
Dry Bulb Temperature (ºF) of Air on Condenser Coil, Min. / Max.		0 / 125		

1. Utilization range “A” in accordance with ARI Standard 110.

LOCATION

Use the following guidelines to select a suitable location for these units.

1. Unit is designed for outdoor installation only.
2. Condenser coils must have an unlimited supply of air.
3. Where a choice of location is possible, position the unit on either north or east side of building.
4. For ground level installation, use a level concrete slab with a minimum thickness of 4 inches. The length and width should be at least 6 inches greater than the unit base rails. Do not tie slab to the building foundation.
5. Roof structures must be able to support the weight of the unit and its options and/or accessories. Unit must be installed on a solid level roof curb or appropriate angle iron frame.

6. Maintain level tolerance to 1/2 inch maximum across the entire length or width of the unit.

⚠WARNING

Excessive exposure of this furnace to contaminated combustion air may result in equipment damage or personal injury. Typical contaminates include: permanent wave solutions, chlorinated waxes and cleaners, chlorine based swimming pool chemicals, water softening chemicals, carbon tetrachloride, Halogen type refrigerants, cleaning solvents (e.g. perchloroethylene), printing inks, paint removers, varnishes, hydrochloric acid, cements and glues, antistatic fabric softeners for clothes dryers, masonry acid washing materials.

If a unit is to be installed on a roof curb or special frame other than a YORK roof curb, gasketing must be applied to all surfaces that come in contact with the unit underside.

RIGGING AND HANDLING

Exercise care when moving the unit. Do not remove any packaging until the unit is near the place of installation. Rig the unit by attaching chain or cable slings to the lifting holes provided in the base rails. Spreader bars, whose length exceeds the largest dimension across the unit, MUST BE USED.

Units may also be moved or lifted with a forklift. Slotted openings in the base rails are provided for this purpose. Fork lengths must be a minimum of 42 inches.

Remove the nesting brackets from the four corners on the top of the unit. All screws that are removed when removing the brackets must be replaced on the unit.

Refer to Table 9 for unit weights and to the Figure 9 for approximate center of gravity.

⚠ CAUTION

Before lifting a unit, make sure that all panels are in place and that its weight is distributed equally on all cables so it will lift evenly.

CLEARANCES

All units require certain clearances for proper operation and service. Installer must make provisions for adequate combustion and ventilation air in accordance with Section 5.3, Air for Combustion and Ventilation of the National Fuel Gas Code, ANSI Z223.1 (in U.S.A.) or Sections 7.2, 7.3 or 7.4 of Gas Installation Codes CSA-B149.1 (in Canada) and/or applicable provisions of the local building codes. Refer to Dimensions and Clearances shown in Figures 10 through 13 and Tables 14 and 15 for the clearances required for combustible construction, servicing, and proper unit operation.

⚠WARNING

Do not permit overhanging structures or shrubs to obstruct outdoor air discharge outlet, combustion air inlet or vent outlets.

DUCTWORK

Ductwork should be designed and sized according to the methods in Manual Q of the Air Conditioning Contractors of America (ACCA).

A closed return duct system shall be used. This shall not preclude use of economizers or outdoor fresh air intake. The supply and return air duct connections at the unit should be made with flexible joints to minimize noise.

The supply and return air duct systems should be designed for the CFM and static requirements of the job. They should NOT be sized to match the dimensions of the duct connections on the unit.

⚠ CAUTION

When fastening ductwork to side duct flanges on unit, insert screws through duct flanges only. DO NOT insert screws through casing. Outdoor ductwork must be insulated and waterproofed.

Refer to Figures 10 through 14 for information concerning side and bottom supply and return air duct openings.

NOTE: It is recommended that, in Canada, the outlet duct be provided with a removable access panel. It is recommended that this opening be

accessible when the unit is installed in service, and of a size such that smoke or reflected light may be observed inside the casing to indicate the presence of leaks in the heat exchanger. The cover should be attached in a manner adequate to prevent leakage.

CONDENSATE DRAIN

Plumbing must conform to local codes. Use a sealing compound on male pipe threads. Install a condensate drain line from the 3/4" NPT female connection on the unit to an open drain.

NOTE: The condensate drain operates in a negative pressure in the cabinet. The condensate drain line MUST be trapped to provide proper drainage. See Figure 1.

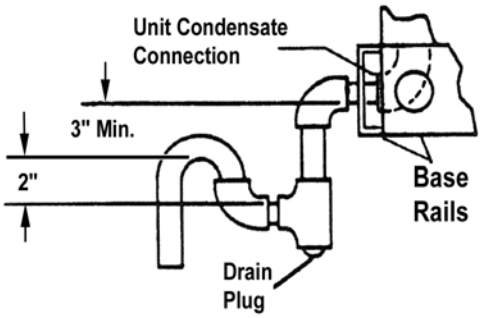


FIGURE 1 - RECOMMENDED DRAIN PIPING

COMPRESSORS

Units are shipped with compressor mountings factory-adjusted and ready for operation.

Units with scroll compressors have a shipping bracket which must be removed after the unit is set in place. See Figure 2.

⚠ CAUTION

Do not loosen compressor mounting bolts.

FILTERS

One-inch or two-inch filters can be supplied with each unit. Filters must always be installed ahead of the evaporator coil and must be kept clean or replaced with same size and type. Dirty filters will reduce the capacity

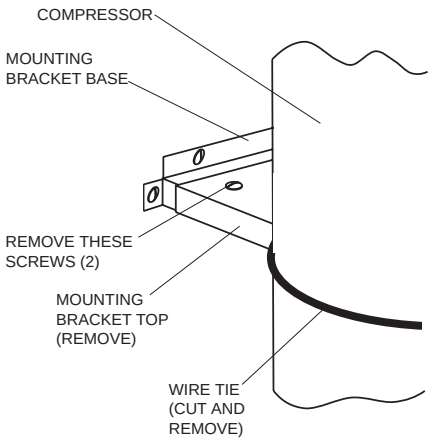


FIGURE 2 - COMPRESSOR RESTRAINING BRACKET

of the unit and will result in frosted coils or safety shutdown. Minimum filter area and required sizes are shown in Physical Data Table 8.

SERVICE ACCESS

The following removable panels provide access to all serviceable components:

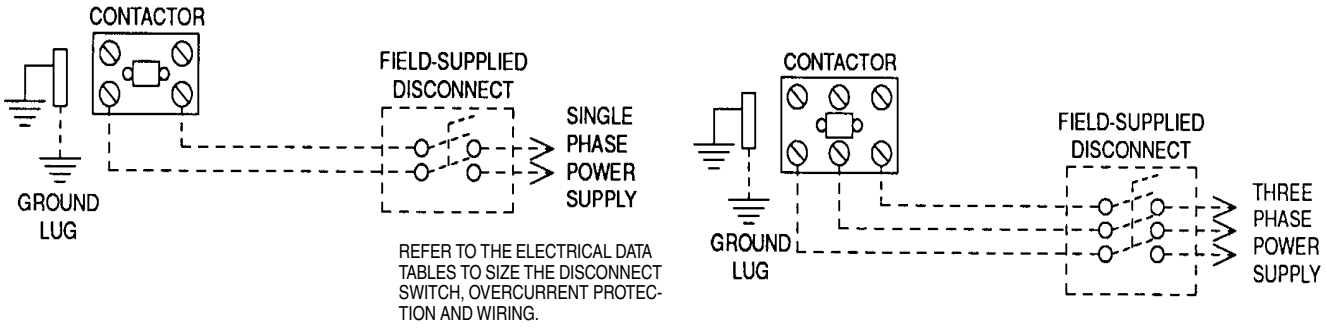
- Compressor compartment
- Electric Heat compartment
- Gas Heat compartment
- Blower compartment
- Main control box
- Filter compartment

Refer to the Dimensions and Clearances shown in Figures 10, 11, 13 and 14 for location of these access panels.

⚠ CAUTION

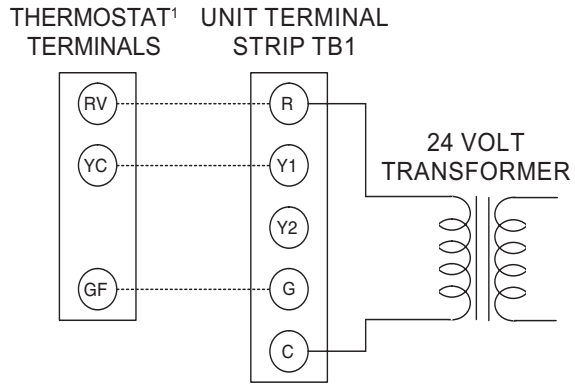
Make sure that all screws and panel latches are replaced and properly positioned on the unit to maintain an airtight seal.

TYPICAL POWER WIRING



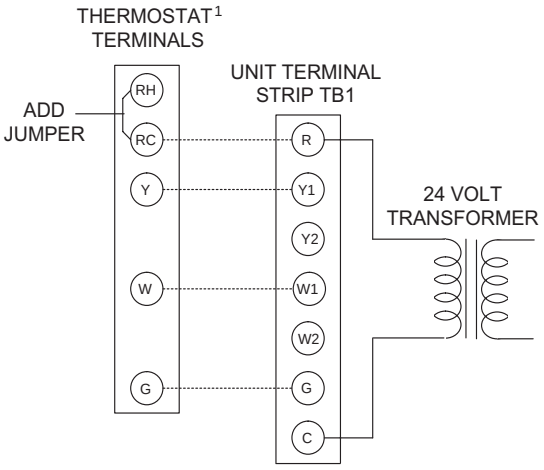
TYPICAL CONTROL WIRING

COOLING ONLY (24 VOLT THERMOSTAT)



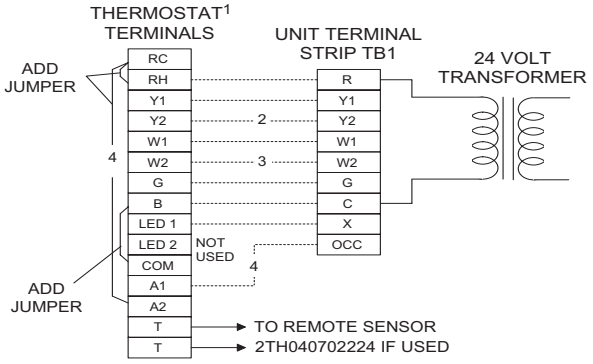
[1]24 VOLT THERMOSTAT 2TH07701024. TO CONTROL THE ECONOMIZER ON SECOND STAGE COOLING, USE THE THERMOSTAT 2TH0401224.

COOLING / HEATING (24 VOLT THERMOSTAT)



[1]24 VOLT THERMOSTAT 2ET07701024. TO CONTROL THE ECONOMIZER ON THE SECOND STAGE COOLING OR TO HAVE AN ELECTRIC HEAT ACCESSORY WITH TWO STAGES OF HEAT, USE THERMOSTAT 2TH0471024.

COOLING / HEATING (ELECTRONIC THERMOSTAT) MULTI STAGE



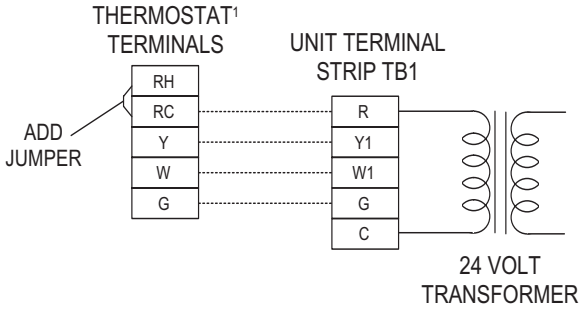
[1] ELECTRONIC PROGRAMMABLE THERMOSTAT 2ET04700224 (INCLUDES SUBBASE).

[2] SECOND STAGE COOLING IS NOT REQUIRED ON UNITS LESS ECONOMIZER.

[3] SECOND STAGE HEATING IS ONLY REQUIRED ON UNITS WITH A TWO STAGE ELECTRIC HEATER OR TWO STAGE GAS HEAT.

[4] REMOVE JUMPER J2 FROM TERMINALS 4 AND 9 ON JUMPER PLUG CONNECTOR P6 ON UNITS WITH ECONOMIZER. TERMINALS A1 AND A2 PROVIDE A RELAY OUT-PUT TO CLOSE THE OUTDOOR ECONOMIZER DAMPERS WHEN THE THERMOSTAT SWITCHES TO THE SET-BACK POSITION.

COOLING / HEATING (ELECTRONIC THERMOSTAT) SINGLE STAGE



[1]ELECTRONIC PROGRAMMABLE THERMOSTAT 2ET07701024 (INCLUDES SUBBASE). TO CONTROL THE ECONOMIZER ON SECOND STAGE COOLING, USE THERMOSTAT 2TH04700224.

FIGURE 3 - TYPICAL FIELD POWER & CONTROL WIRING

THERMOSTAT

The room thermostat should be located on an inside wall approximately 56 inches above the floor where it will not be subject to drafts, sun exposure or heat from electrical fixtures or appliances. Follow the manufacturer's instructions enclosed with the thermostat for general installation procedure. A minimum of seven color-coded insulated wires (#18 AWG) should be used to connect the thermostat to the unit.

POWER AND CONTROL WIRING

Field wiring to the unit must conform to provisions of the National Electrical Code, ANSI / NFPA No. 70 (in U.S.A.), current Canadian Electrical Code C22.1 (in Canada) and/or local ordinances. The unit must be electrically grounded in accordance with NEC and CEC (as specified above) and/or local codes. Voltage tolerances, which must be maintained at the compressor terminals, during starting and running conditions, are indicated on the unit Rating Plate and the Unit Application Data table.

The internal wiring harness furnished with this unit is an integral part of a CSA design certified unit. Field alteration to comply with electrical codes should not be required.

A fused disconnect switch should be field provided for the unit. The switch must be separate from all other circuits. Wire entry at knockout openings require conduit fittings to comply with NEC (in U.S.A.), CEC (in Canada) and/or local codes. If any of the wire supplied with the unit must be replaced, replacement wire must be of the type shown on the wiring diagram and the same minimum gauge as the replaced wire.

Use copper conductors properly sized to carry the load. Each unit must be wired with a separate branch circuit fed directly from the meter panel and properly fused.

⚠ CAUTION

When connecting electrical power and control wiring to the unit, waterproof type connectors **MUST BE USED** so that water or moisture cannot be drawn into the unit during normal operation. The above waterproofing conditions will also apply when installing a field-supplied disconnect switch.

Refer to the Typical Field Wiring Figure 3 and to the appropriate unit wiring diagram for control circuit and power wiring information.

TABLE 2: CONTROL WIRE SIZES

Wire Size	Maximum Length[1]
18 AWG	150 Feet

1. From the unit to the thermostat and back to the unit.

OPTIONS/ACCESSORIES

ELECTRIC HEAT

The factory- or field-installed heaters are wired for single point power supply. Power supply need only be brought into the single point terminal block and thermostat wiring to the low voltage terminal strip located in the upper portion of the unit control box.

These CSA approved heaters are located within the central compartment of the unit with the heater elements extending into the supply air chamber. Refer to Figure 10 for access panel location.

Fuses are supplied, where required, by the factory. Some KW sizes require fuses and others do not. Refer to Table 3 for minimum CFM limitations and to Tables 10 and 11 for electrical data.

TABLE 3: ELECTRIC HEATER CFM LIMITATIONS

UNIT MODEL SIZE NOMINAL TONS	VOLTAGE	MINIMUM SUPPLY AIR CFM					
		HEATER SIZE NOMINAL KW					
		5	7	10	15	20	30
3	208/230-1-60	1100	1100	1200	1200	1300	-
	208/230-3-60	1100	1100	1200	1200	1300	-
	460-3-60	-	1100	1200	1200	1300	-
	575-3-60	-	-	1200	1200	1300	-
4	208/230-1-60	1300	1300	1300	1300	1300	-
	208/230-3-60	1300	1300	1300	1300	1300	-
	460-3-60	-	1300	1300	1300	1300	-
	575-3-60	-	-	1300	1300	1400	-
5	208/230-1-60	1600	1600	1600	1600	1600	1600
	208/230-3-60	1600	1600	1600	1600	1600	1600
	460-3-60	1600	1600	1600	1600	1600	1600
	575-3-60	-	1600	1600	1600	1600	1800

GAS HEAT

These gas-fired heaters have aluminized-steel or optional stainless steel, tubular heat exchangers with spark ignition with proven pilot.

All gas heaters are shipped from the factory equipped for natural gas use. See Gas Heat Application Data Table.

For natural gas heating installations in locations requiring low NOx emissions, Accessory model 1LN0404 must be used.

TABLE 4: GAS HEAT APPLICATION DATA

GAS HEAT OPTION	INPUT CAPACITY (MBH)	OUTPUT CAPACITY (MBH)	AVAILABLE ON MODELS	GAS RATE[1] (FT^3/HR)	TEMPERATURE RISE °F AT FULL INPUT[2]	
					MIN.	MAX.
N04	50	40	3 TON	47	15	45
N06	75	60	4 TON	70	45	55
N08	100	80	3/5/6 TON	93	40/25/25	70/55/55
N10	125	100	4/5/6 TON	116	45/35/35	75/65/65
D06	75	61	3/4/5/6 TON	70	35/25/20/15	70/70/55/45
D10	115	92	3 TON	107	55	90
D10	125	101	4/5/6 TON	116	45/35/30	75/75/75

NOTE: Gas Heaters are shipped available for natural gas, but can be converted to L.P. with Kit Model No. 1NP0440 or 1NP0485 (2 Stage). All furnaces meet the latest California seasonal efficiency requirements.

1. Based on 1075 Btu/Ft^3.
2. The air flow must be adjusted to obtain a temperature rise within the range shown.

GAS PIPING

Proper sizing of gas piping depends on the cubic feet per hour of gas flow required, specific gravity of the gas and the length of run. “National Fuel Gas Code” Z223.1 (in U.S.A.) or the current Gas Installation Codes CSA-B149.1 (in Canada) should be followed in all cases unless superseded by local codes or gas utility requirements. Refer to the Pipe Sizing Table 5.

The heating value of the gas may differ with locality. The value should be checked with the local gas utility.

NOTE: There may be a local gas utility requirement specifying a minimum diameter for gas piping. All units require a 1/2” pipe connection at the entrance fitting.

TABLE 5: GAS PIPE SIZING

LENGTH IN FEET	NOMINAL IRON PIPE SIZE			
	1/2 in.	3/4 in.	1 in.	1-1/4 in.
10	132	278	520	1,050
20	92	190	350	730
30	73	152	285	590
40	63	130	245	500
50	56	115	215	440
60	50	105	195	400
70	46	96	180	370
80	43	90	170	350
90	40	84	160	320
100	38	79	150	305

Maximum capacity of pipe in cubic feet of gas per hour. (Based upon a pressure drop of 0.3 inch water column and 0.6 specific gravity gas).

GAS CONNECTION

The gas supply line can be routed through the knockouts located on the front of the unit or through the opening provided in the unit's base. Refer to Figure 11 to locate these access openings. Typical supply piping arrangements are shown in Figures 4 and 5. All shaded items are field-supplied.

If gas supply line is routed through the unit's base ensure that the burner assembly can be removed for maintenance without disturbing the supply line. The supply piping and fittings must lie below the bottom gas manifold to avoid interference with the burner assembly.

Two grommets are shipped in the blower compartment (in parts bag taped to the blower housing) of every unit with gas heat and should be used in the knockouts when the gas piping penetrates the front of the unit.

After the gas supply piping has been installed, the bottom opening in the unit should be sealed to prevent water from leaking into the building.

Gas piping recommendations:

1. A drip leg and a ground joint union must be installed in the gas piping.

2. When required by local codes, a manual shut-off valve may have to be installed outside of the unit.

3. Use wrought iron or steel pipe for all gas lines. Pipe compound should be applied sparingly to male threads only.

⚠WARNING

Natural gas may contain some propane. Propane, being an excellent solvent, will quickly dissolve white lead or most standard commercial compounds. Therefore, a special pipe compound must be applied when wrought iron or steel pipe is used. Shellac base compounds such as Gaskolac or Stalastic, and compounds such as Rectorseal #5, Clyde's or John Crane may be used.

4. All piping should be cleaned of dirt and scale by hammering on the outside of the pipe and blowing out the loose dirt and scale. Before initial start-up, be sure that all of the gas lines external to the unit have been purged of air.

5. The gas supply should be a separate line and installed in accordance with all safety codes as prescribed under “Limitations”. After the gas connections have been completed, open the main shut-off valve admitting normal gas pressure to the mains. Check all joints for leaks with soap solution or other material suitable for the purpose. **NEVER USE A FLAME**.

⚠WARNING

FIRE OR EXPLOSION HAZARD

Failure to follow the safety warning exactly could result in serious injury, death or property damage.

Never test for gas leaks with an open flame. use a commercially available soap solution made specifically for the detection of leaks to check all connections. A fire or explosion may result causing property damage, personal injury or loss of life.

6. The furnace and its individual manual shut-off valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig (3.48kPa).

   The furnace must be isolated from the gas supply piping system by closing its individual manual shut-off valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psig (3.48kPa).

7. A 1/8 inch NPT plugged tap, accessible for test gage connection, must be installed immediately upstream of the gas supply connection to the furnace.

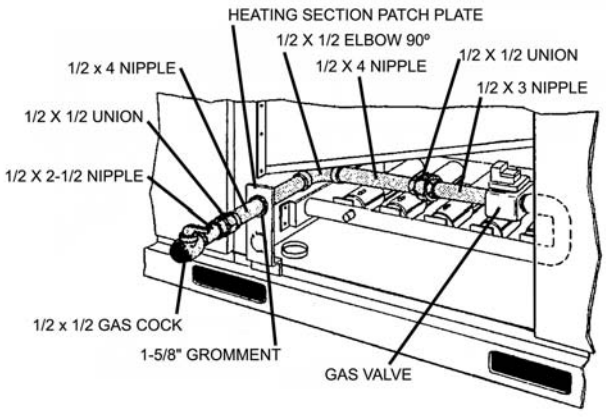


FIGURE 4 - EXTERNAL SUPPLY CONNECTION EXTERNAL SHUT-OFF

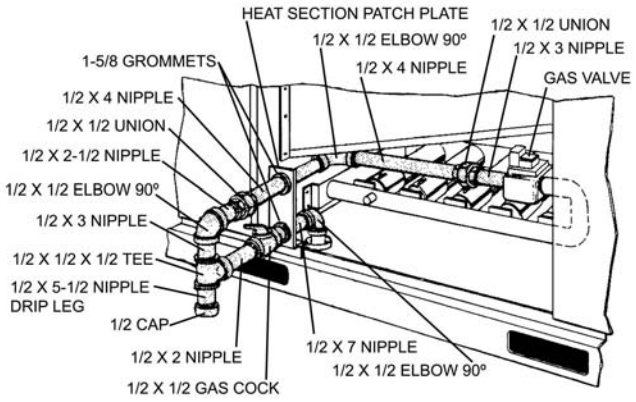


FIGURE 5 - BOTTOM SUPPLY CONNECTION EXTERNAL SHUT-OFF

L.P. UNITS, TANKS AND PIPING

All gas heat units are shipped from the factory equipped for natural gas use only. The unit may be converted in the field for use with L.P./propane gas with accessory kit model number 1NP0440 or 1NP0485 (2 Stage).

All L.P./propane gas equipment must conform to the safety standards of the National Fire Protection Association.

For satisfactory operation, adequate L.P./propane gas pressure must be provided at the unit manifold under full load. Maintaining proper gas pressure depends on three main factors:

1. The vaporization rate depends on (a) the temperature of the liquid and (b) the “wetted surface” area of the container or containers.
2. The proper pressure regulation. (Two-stage regulation is recommended from the standpoint of both cost and efficiency.)
3. The pressure drop in the lines between regulators and between the second stage regulator and the appliance. Pipe size required will depend on the length of the pipe run and the total load of all appliances.

Complete information regarding tank sizing for vaporization, recommended regulator settings, and pipe sizing is available from most regulator manufacturers and L.P./propane gas suppliers.

L.P./propane gas is an excellent solvent and special pipe compound must be used when assembling piping

for this gas as it will quickly dissolve white lead or most standard commercial compounds. Shellac base compounds such as Rectorseal #5 are satisfactory for this type of gas.

Check all connections for leaks when piping is completed, using a soap solution. **NEVER USE A FLAME**.

⚠WARNING

FIRE OR EXPLOSION HAZARD

Failure to follow the safety warning exactly could result in serious injury, death or property damage.

Never test for gas leaks with an open flame. use a commercially available soap solution made specifically for the detection of leaks to check all connections. A fire or explosion may result causing property damage, personal injury or loss of life.

VENT AND COMBUSTION AIR HOODS

The vent hood and combustion air hood (with screens) are shipped attached to the blower housing in the blower compartment. These hoods must be installed to assure proper unit function. All hoods must be fastened to the outside of the gas heat access panel with the screws provided in the bag also attached to the blower housing.

The screen for the combustion air intake hood is secured to the inside of the access panel opening with three fasteners and the screws used for mounting the hood to the panel. The top flange of this hood slips in under the top of the access panel opening when installing. Refer to Vent and Combustion Air Hood Figure 6.

The vent hood is installed by inserting the top flange of the hood into the slotted opening in the access panel and securing in place.

The products of combustion are discharged horizontally through these two screened, hooded vent openings on the upper gas heat access panel.

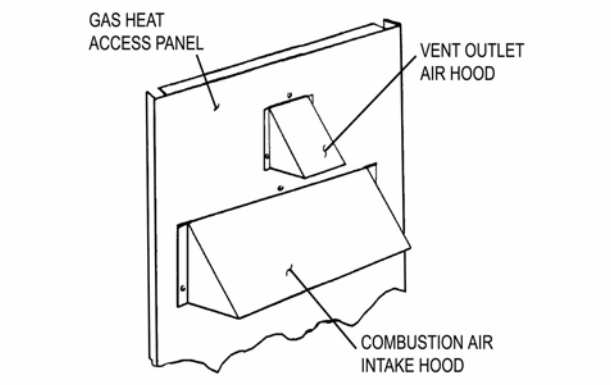


FIGURE 6 - VENT AND COMBUSTION AIR HOOD

⚠ CAUTION

An adhesive backed label is provided over the outside of the combustion air inlet opening to prevent moisture from entering the unit, which could cause damage to electrical components. Allow this closure label to remain in place until the combustion air hood is to be installed.

ECONOMIZER/MOTORIZED DAMPER AND RAIN HOOD

The instruction for the optional economizer/motorized damper and rain hood can be found in form 035-07364-000. Use these instructions when field assembling an economizer rain hood onto a unit. The outdoor and return air dampers, the damper actuator, the damper linkage, the outdoor and return air divider baffles, and all the control sensors are factory mounted as part of the “Factory installed” economizer/motorized damper options.

POWER EXHAUST/BAROMETRIC RELIEF DAMPER AND RAIN HOOD

The instructions for the power exhaust/barometric relief damper and rain hood can be found in form 530.18-N1.10V.

All of the components, including the dampers, hardware, and mounting instructions are shipped in a single package external from the unit and must be field assembled and installed.

Power exhaust is only available as a field installed accessory.

ECONOMIZER AND POWER EXHAUST DAMPER SET POINT ADJUSTMENTS AND INFORMATION

Remove the economizer access panel from the unit. Loosen but do not remove the two panel latches. Locate the economizer control module, where the following adjustments will be made.

⚠ CAUTION

Extreme care must be excercised in turning all setpoint, maximium, and minimum damper positioning adjustment screws to prevent twisting them off.

Check that the damper blades move smoothly without binding; carefully turn the Minimum Position Adjusting screw (found on the damper control module) fully clockwise and then set the thermostat indoor fan switch to the on position and then off, or energize and de-energize terminals “R” to “G”.

MINIMUM POSITION ADJUSTMENT

With thermostat set to indoor fan on position, or terminals “R” to “G” energized, turn the Minimum Position Adjusting screw (located on the damper control module) counterclockwise until the desired minimum damper position has been attained.

ENTHALPY SET POINT ADJUSTMENT

The enthalpy set point may now be set by selecting the desired setpoint shown in the Enthalpy Setpoint Adjustment Figure 7. Adjust as follows:

- For a single enthalpy operation carefully turn the set point adjusting screw (found on the damper control module) to the “A”, “B”, “C” or “D” setting corresponding to the lettered curve of the Enthalpy Setpoint Adjustment Figure 7.
- For a dual enthalpy operation, carefully turn the set point adjusting screw fully clockwise past the “D” setting.

POWER EXHAUST DAMPER SETPOINT (WITH OR WITHOUT POWER EXHAUST)

- With no power exhaust option, adjust the Exhaust Air Adjustment Screw fully clockwise.
- With power exhaust option, each building pressurization requirement will be different. The point at which the power exhaust comes on is determined by the economizer damper position (Percent Open). The Exhaust Air Adjustment Screw should be set at the Percent Open of the economizer damper at which the power exhaust is needed. It can be set from 0 to 100% damper open.

INDOOR AIR QUALITY

Indoor Air quality (indoor sensor input): Terminal AQ accepts a +2 to +10 Vdc signal with respect to the (AQ1) terminal. When the signal is below it's setpoint, the actuator is allowed to modulate normally in accordance with the enthalpy and mixed air sensor inputs. When the AQ signal exceeds it's setpoint setting and there is no call for free cooling, the actuator is proportionately modulated from the 2 to 10 Vdc signal, with 2 Vdc corresponding to full closed and 10 Vdc corresponding to full open. When there is no call for free cooling, the damper position is limited by the IAQ Max damper position setting. When the signal exceeds it's setpoint (Demand Control Ventilation Setpoint) setting and there is a call for free cooling, the actuator modulates from the minimum position to the full open position based on the highest call from either the mixed air sensor input or the AQ voltage input.

- Optional CO_2 Space Sensor Kit Part # 2AQ04700324
- Optional CO_2 Unit Sensor Kit Part # 2AQ04700424

Replace the economizer access panel.

CONTROL CURVE	CONTROL POINT APPROX. ^{0}F (^{0}C) AT 50% RH
A	73 (23)
B	70 (21)
C	67 (19)
D	63 (17)

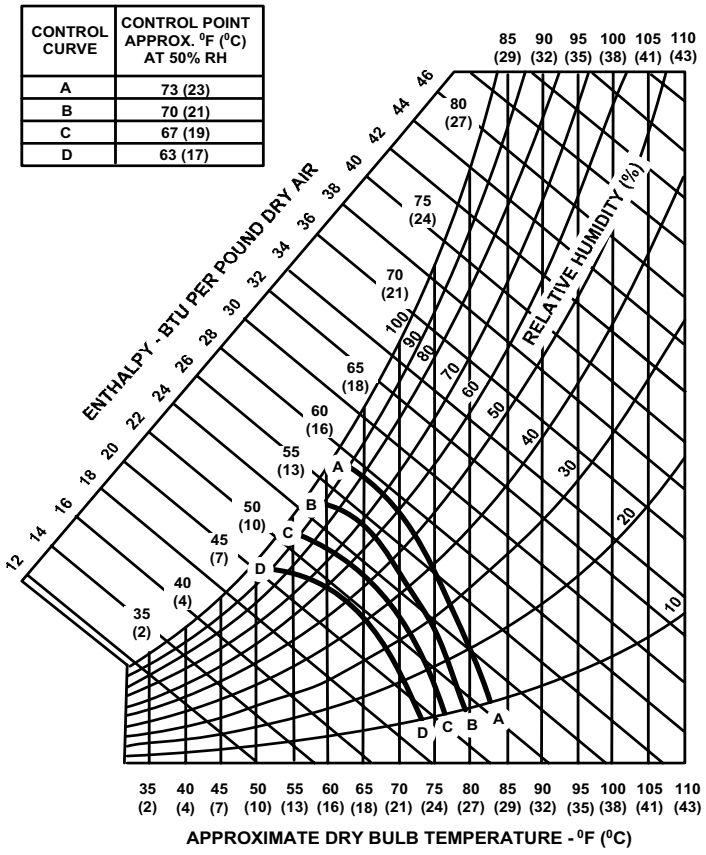


FIGURE 7 - ENTHALPY SETPOINT ADJUSTMENT

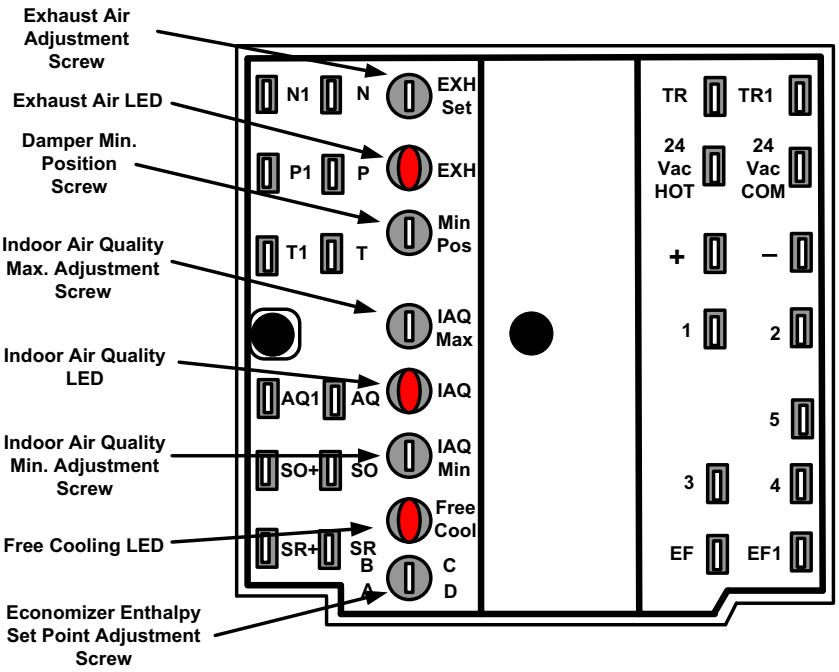


FIGURE 8 - HONEYWELL ECONOMIZER CONTROL W7212

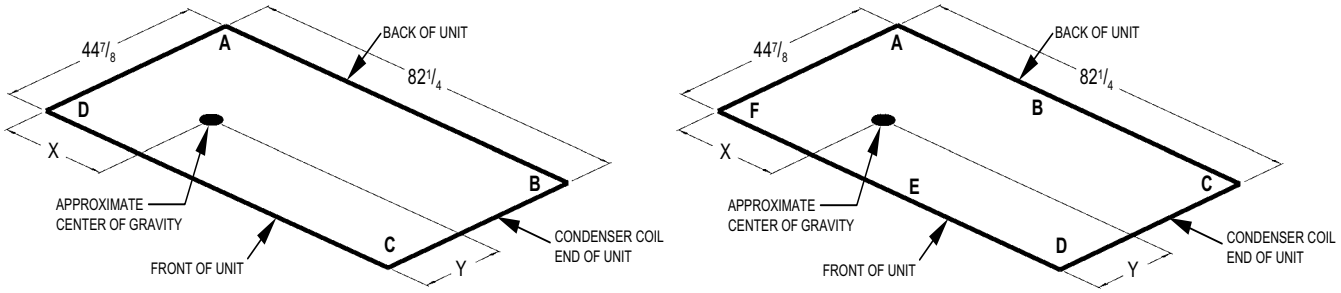


FIGURE 9 - FOUR AND SIX POINT LOADING

TABLE 6: CENTER OF GRAVITY (ALL MODELS)

DIMENSION	DJ 036-060
X	40
Y	20

TABLE 7: DJ 4 AND 6 POINT LOADS WEIGHT DISTRIBUTION

UNIT	TOTAL	4-Point Loading (lb)				6-Point Loading (lb)					
		A	B	C	D	A	B	C	D	E	F
DJ036 Cooling/ Electric	**575**	132	125	155	164	89	85	82	102	106	110
DJ036N04	**615**	141	133	166	175	95	91	88	110	114	118
DJ036D06	**625**	143	135	168	178	96	93	89	111	115	120
DJ036N08	**635**	145	138	171	181	98	94	91	113	117	122
DJ036D10	**645**	148	140	174	184	99	96	92	115	119	124
DJ048 Cooling/ Electric	**585**	134	127	158	167	90	87	84	104	108	112
DJ048(D,N)06	**635**	145	138	171	181	98	94	91	113	117	122
DJ048(D,N)10	**655**	150	142	177	187	101	97	94	117	121	125
DJ060 Cooling/ Electric	**590**	135	128	159	168	91	88	84	105	109	113
DJ060D06	**640**	147	139	173	182	99	95	92	114	118	123
DJ060N08	**650**	149	141	175	185	100	97	93	116	120	125
DJ060(D,N)10	**660**	151	143	178	188	102	98	95	118	122	126

TABLE 8: DJ PHYSICAL DATA

MODELS		DJ		
		036	048	060
EVAPORATOR BLOWER	Centrifugal Blower (Dia. x Wd. in.)	12 X 10	12 X 10	12 X 10
	Fan Motor HP (Belt Drive)	1 1/2	1 1/2	1 1/2
EVAPORATOR COIL	Rows Deep	3	4	4
	Fins Per Inch	13	13	13
	Face Area ($Ft.^2$)	5.1	5.1	5.1
CONDENSER FANS	Propeller Dia. (in.)	24	24	24
	Fan Motor HP	1/2	1/2	1/2
	Nom. CFM	4200	4200	4200
CONDENSER COILS	Rows Deep	2	2	2
	Fins Per Inch	18	18	18
	Face Area ($Ft.^2$)	17.1	17.1	17.1
COMPRESSOR	Quantity	1	1	1
	Type	Recip.	Recip.	Scroll
AIR FILTERS	Quantity Per Unit (15” X 20” X 1” or 2“)	2	2	2
	Quantity Per Unit (14” X 25” X 1” or 2“)	1	1	1
	Total Face Area ($Ft.^2$)	6.3	6.3	6.3
CHARGE	Refrigerant 22 (lbs./oz.)	9/4	9/8	11/0

TABLE 9: DJ OPERATING WEIGHTS (LBS.)

MODEL SIZE			3 TON	4 TON	5 TON
BASIC UNIT	DJ (Cooling Only)		575	585	590
	DJ (Gas/Electric)	N04	615	-	-
		N06	-	635	-
		N08	635	-	650
		N10	-	655	660
		D06	625	635	640
		D10	645	655	660
OPTIONS	Economizer		50		
	Motorized Damper		26		
	Electric Heater	5 - 7 kW	18		
		10 - 15 kW	23		
		20 - 30 kW	28		
ACCY.	Roof Curb		92		
	Barometric Relief / Fixed Air Damper		10		

TABLE 10: ELECTRICAL DATA - DJ036, 048 & 060 BELT DRIVE W/O POWERED OUTLET

MODEL TONNAGE	VOLTAGE	COMPRESSORS		OD FAN MOTOR FLA	ID BLOWER MOTOR FLA	CONV OUTLET FLA	ELECTRIC HEATER MODEL NO.	HEATER KW	HEATER AMPS	MIN. CIRCUIT AMPACITY (AMPS)	MAX. FUSE/ BRKR[1] SIZE (AMPS)
		RLA EACH	LRA EACH								
DJ036	208-1-60	11.3	68.0	2.3	7.6	0.0	None	--	--	24.0	30
							2CE04510506	4.0	19.2	33.5	35
							2CE04510706	5.6	26.9	43.2	45
							2CE04511006	8.0	38.5	57.6	60
							2CE04511506	11.9	57.2	81.0	90
							2CE04512006	15.9	76.4	105.1	110
	230-1-60	11.3	68.0	2.3	7.6	0.0	None	--	--	24.0	30
							2CE04510506	5.3	22.1	37.1	40
							2CE04510706	7.5	31.3	48.6	50
							2CE04511006	10.6	44.2	64.7	70
							2CE04511506	15.9	66.3	92.3	100
							2CE04512006	21.2	88.3	119.9	125
	208-3-60	8.3	68.0	2.3	5.2	0.0	None	--	--	17.9	25
							2CE04510525[2]	4.0	11.1	20.4	25
							2CE04510725[2]	5.6	15.5	25.9	30
							2CE04511025	8.0	22.2	34.3	35
							2CE04511525	11.9	33.0	47.8	50
							2CE04512025	15.9	44.1	61.7	70
	230-3-60	8.3	68.0	2.3	5.2	0.0	None	--	--	17.9	25
							2CE04510525[2]	5.3	12.7	22.4	25
							2CE04510725[2]	7.5	18.0	29.1	30
							2CE04511025	10.6	25.5	38.4	40
							2CE04511525	15.9	38.2	54.3	60
							2CE04512025	21.2	51.0	70.2	80
	460-3-60	5.1	34.0	1.3	2.6	0.0	None	--	--	10.3	15
							2CE04510746[2]	6.8	8.2	13.5	15
							2CE04511046[2]	10.1	12.1	18.4	20
							2CE04511546[2]	13.6	16.4	23.7	25
							2CE04512046[2]	19.5	23.5	32.6	35
	575-3-60	3.2	26.0	1.3	2.0	0.0	None	--	--	7.0	15
							2CE04511058	10.6	10.2	15.2	20
							2CE04511558	15.9	15.3	21.6	25
							2CE04512058	21.2	20.4	28.0	30
DJ048	208-1-60	15.4	86.0	2.3	7.6	0.0	None	--	--	29.1	35
							2CE04510506	4.0	19.2	33.5	40
							2CE04510706	5.6	26.9	43.2	45
							2CE04511006	8.0	38.5	57.6	60
							2CE04511506	11.9	57.2	81.0	90
							2CE04512006	15.9	76.4	105.1	110
	230-1-60	15.4	86.0	2.3	7.6	0.0	None	--	--	29.1	35
							2CE04510506	5.3	22.1	37.1	40
							2CE04510706	7.5	31.3	48.6	50
							2CE04511006	10.6	44.2	64.7	70
							2CE04511506	15.9	66.3	92.3	100
							2CE04512006	21.2	88.3	119.9	125
	208-3-60	11.5	84.0	2.3	5.2	0.0	None	--	--	21.9	30
							2CE04510525[2]	4.0	11.1	21.9	30
							2CE04510725[2]	5.6	15.5	25.9	30
							2CE04511025	8.0	22.2	34.3	35
							2CE04511525	11.9	33.0	47.8	50
							2CE04512025	15.9	44.1	61.7	70
	230-3-60	11.5	84.0	2.3	5.2	0.0	None	--	--	21.9	30
							2CE04510525[2]	5.3	12.7	22.4	30
							2CE04510725[2]	7.5	18.0	29.1	30
							2CE04511025	10.6	25.5	38.4	40
							2CE04511525	15.9	38.2	54.3	60
							2CE04512025	21.2	51.0	70.2	80
	460-3-60	5.8	42.0	1.3	2.6	0.0	None	--	--	11.1	15
							2CE04510746[2]	6.8	8.2	13.5	15
							2CE04511046[2]	10.1	12.1	18.4	20
							2CE04511546[2]	13.6	16.4	23.7	25
							2CE04512046[2]	19.5	23.5	32.6	35
	575-3-60	5.1	34.0	1.3	2.0	0.0	None	--	--	9.4	15
							2CE04511058	10.6	10.2	15.2	20
							2CE04511558	15.9	15.3	21.6	25
							2CE04512058	21.2	20.4	28.0	30

TABLE 10: ELECTRICAL DATA - DJ036, 048 & 060 BELT DRIVE W/O POWERED OUTLET (CONT)

MODEL TONNAGE	VOLTAGE	COMPRESSORS		OD FAN MOTOR FLA	ID BLOWER MOTOR FLA	CONV OUTLET FLA	ELECTRIC HEATER MODEL NO.	HEATER KW	HEATER AMPS	MIN. CIRCUIT AMPACITY (AMPS)	MAX. FUSE/ BRKR[1] SIZE (AMPS)
		RLA EACH	LRA EACH								
DJ060	208-1-60	25.0	150.0	2.3	7.6	0.0	None	--	--	41.2	45
							2CE04510506	4.0	19.2	41.2	45
							2CE04510706	5.6	26.9	43.2	60
							2CE04511006	8.0	38.5	57.6	60
							2CE04511506	11.9	57.2	81.0	90
							2CE04512006	15.9	76.4	105.1	110
							2CE04513006	22.2	106.7	142.9	150
	230-1-60	25.0	150.0	2.3	7.6	0.0	None	--	--	41.2	45
							2CE04510506	5.3	22.1	41.2	45
							2CE04510706	7.5	31.3	48.6	60
							2CE04511006	10.6	44.2	64.7	70
							2CE04511506	15.9	66.3	92.3	100
							2CE04512006	21.2	88.3	119.9	125
							2CE04513006	29.6	123.3	163.7	175
	208-3-60	17.3	123.0	2.3	5.2	0.0	None	--	--	29.1	35
							2CE04510525[2]	4.0	11.1	29.1	35
							2CE04510725[2]	5.6	15.5	29.1	35
							2CE04511025	8.0	22.2	34.3	45
							2CE04511525	11.9	33.0	47.8	50
							2CE04512025	15.9	44.1	61.7	70
							2CE04513025	22.2	61.6	83.5	90
	230-3-60	17.3	123.0	2.3	5.2	0.0	None	--	--	29.1	35
							2CE04510525[2]	5.3	12.7	29.1	35
							2CE04510725[2]	7.5	18.0	29.1	35
							2CE04511025	10.6	25.5	38.4	45
							2CE04511525	15.9	38.2	54.3	60
							2CE04512025	21.2	51.0	70.2	80
							2CE04513025	29.6	71.2	95.5	100
	460-3-60	8.4	70.0	1.3	2.6	0.0	None	--	--	14.4	20
							2CE04510746[2]	6.8	8.2	14.4	20
							2CE04511046[2]	10.1	12.1	18.4	20
							2CE04511546[2]	13.6	16.4	23.7	25
							2CE04512046[2]	19.5	23.5	32.6	35
							2CE04513046[2]	28.8	34.6	46.6	50
	575-3-60	7.0	53.0	1.3	2.0	0.0	None	--	--	11.8	15
							2CE04511058	10.6	10.2	15.2	20
							2CE04511558	15.9	15.3	21.6	25
							2CE04512058	21.2	20.4	28.0	30
							2CE04513058	30.4	29.3	39.1	40

1. HACR Type per NEC.
2. These electric heaters do not include a fuse box. If a fuse box is required to meet a local code (i.e. Chicago), the fuse block accessories 2FB04700825 and 2FB0470086 are available for field installation.

TABLE 11: ELECTRICAL DATA - DJ036, 048 & 060 BELT DRIVE WITH POWERED CONVENIENCE OUTLET

MODEL TONNAGE	VOLTAGE	COMPRESSORS		OD FAN MOTOR FLA	ID BLOWER MOTOR FLA	CONV OUTLET FLA	ELECTRIC HEATER MODEL NO.	HEATER KW	HEATER AMPS	MIN. CIRCUIT AMPACITY (AMPS)	MAX. FUSE/ BRKR[1] SIZE (AMPS)
		RLA EACH	LRA EACH								
DJ036	208-1-60	11.3	68.0	2.3	7.6	10.0	None	--	--	34.0	45
							2CE04510506	4.0	19.2	46.0	50
							2CE04510706	5.6	26.9	55.7	60
							2CE04511006	8.0	38.5	70.1	80
							2CE04511506	11.9	57.2	93.5	100
							2CE04512006	15.9	76.4	117.6	125
	230-1-60	11.3	68.0	2.3	7.6	10.0	None	--	--	34.0	45
							2CE04510506	5.3	22.1	49.6	50
							2CE04510706	7.5	31.3	61.1	70
							2CE04511006	10.6	44.2	77.2	80
							2CE04511506	15.9	66.3	104.8	110
							2CE04512006	21.2	88.3	132.4	150
	208-3-60	8.3	68.0	2.3	5.2	10.0	None	--	--	28.3	35
							2CE04510525[2]	4.0	11.1	32.9	35
							2CE04510725[2]	5.6	15.5	38.4	40
							2CE04511025	8.0	22.2	46.8	50
							2CE04511525	11.9	33.0	60.3	70
							2CE04512025	15.9	44.1	74.2	80
	230-3-60	8.3	68.0	2.3	5.2	10.0	None	--	--	28.3	35
							2CE04510525[2]	5.3	12.7	34.9	40
							2CE04510725[2]	7.5	18.0	41.6	45
							2CE04511025	10.6	25.5	50.9	60
							2CE04511525	15.9	38.2	66.8	70
							2CE04512025	21.2	51.0	82.7	90
	460-3-60	5.1	34.0	1.3	2.6	5.0	None	--	--	15.3	20
							2CE04510746[2]	6.8	8.2	19.7	20
							2CE04511046[2]	10.1	12.1	24.7	25
							2CE04511546[2]	13.6	16.4	29.9	30
							2CE04512046[2]	19.5	23.5	38.8	40
	575-3-60	3.2	26.0	1.3	2.0	4.0	None	--	--	11.2	15
							2CE04511058	10.6	10.2	20.2	25
							2CE04511558	15.9	15.3	26.6	30
							2CE04512058	21.2	20.4	33.0	35
DJ048	208-1-60	15.4	86.0	2.3	7.6	10.0	None	--	--	39.1	50
							2CE04510506	4.0	19.2	46.0	50
							2CE04510706	5.6	26.9	55.7	60
							2CE04511006	8.0	38.5	70.1	80
							2CE04511506	11.9	57.2	93.5	100
							2CE04512006	15.9	76.4	117.6	125
	230-1-60	15,4	86.0	2.3	7.6	10.0	None	--	--	39.1	50
							2CE04510506	5.3	22.1	49.6	50
							2CE04510706	7.5	31.3	61.1	70
							2CE04511006	10.6	44.2	77.2	80
							2CE04511506	15.9	66.3	104.8	110
							2CE04512006	21.2	88.3	132.4	150
	208-3-60	11.5	84.0	2.3	5.2	10.0	None	--	--	31.9	40
							2CE04510525[2]	4.0	11.1	32.9	40
							2CE04510725[2]	5.6	15.5	38.4	40
							2CE04511025	8.0	22.2	46.8	50
							2CE04511525	11.9	33.0	60.3	70
							2CE04512025	15.9	44.1	74.2	80
	230-3-60	11.5	84.0	2.3	5.2	10.0	None	--	--	31.9	40
							2CE04510525[2]	5.3	12.7	34.9	40
							2CE04510725[2]	7.5	18.0	41.6	45
							2CE04511025	10.6	25.5	50.9	60
							2CE04511525	15.9	38.2	66.8	70
							2CE04512025	21.2	51.0	82.7	90
	460-3-60	5.8	42.0	1.3	2.6	5.0	None	--	--	16.1	20
							2CE04510746[2]	6.8	8.2	19.7	20
							2CE04511046[2]	10.1	12.1	24.7	25
							2CE04511546[2]	13.6	16.4	29.9	30
							2CE04512046[2]	19.5	23.5	38.8	40
	575-3-60	5.1	34.0	1.3	2.0	4.0	None	--	--	13.4	15
							2CE04511058	10.6	10.2	20.2	25
							2CE04511558	15.9	15.3	26.6	30
							2CE04512058	21.2	20.4	33.0	35

TABLE 11: ELECTRICAL DATA - DJ036, 048 & 060 BELT DRIVE WITH POWERED CONVENIENCE OUTLET

MODEL TONNAGE	VOLTAGE	COMPRESSORS		OD FAN MOTOR FLA	ID BLOWER MOTOR FLA	CONV OUTLET FLA	ELECTRIC HEATER MODEL NO.	HEATER KW	HEATER AMPS	MIN. CIRCUIT AMPACITY (AMPS)	MAX. FUSE/ BRKR[1] SIZE (AMPS)
		RLA EACH	LRA EACH								
DJ060	208-1-60	25.0	150.0	2.3	7.6	10.0	None	--	--	51.2	70
							2CE04510506	4.0	19.2	51.2	70
							2CE04510706	5.6	26.9	55.7	70
							2CE04511006	8.0	38.5	70.1	80
							2CE04511506	11.9	57.2	93.5	100
							2CE04512006	15.9	76.4	117.6	125
							2CE04513006	22.2	106.7	155.4	175
	230-1-60	25.0	150.0	2.3	7.6	10.0	None	--	--	51.2	70
							2CE04510506	5.3	22.1	51.2	70
							2CE04510706	7.5	31.3	61.1	70
							2CE04511006	10.6	44.2	77.2	80
							2CE04511506	15.9	66.3	104.8	110
							2CE04512006	21.2	88.3	132.4	150
							2CE04513006	29.6	123.3	176.2	200
	208-3-60	17.3	123.0	2.3	5.2	10.0	None	--	--	39.1	50
							2CE04510525[2]	4.0	11.1	39.1	50
							2CE04510725[2]	5.6	15.5	39.1	50
							2CE04511025	8.0	22.2	46.8	50
							2CE04511525	11.9	33.0	60.3	70
							2CE04512025	15.9	44.1	74.2	80
							2CE04513025	22.2	61.6	96.0	100
	230-3-60	17.3	123.0	2.3	5.2	10.0	None	--	--	39.1	50
							2CE04510525[2]	5.3	12.7	39.1	50
							2CE04510725[2]	7.5	18.0	41.6	50
							2CE04511025	10.6	25.5	50.9	60
							2CE04511525	15.9	38.2	66.8	70
							2CE04512025	21.2	51.0	82.7	90
							2CE04513025	29.6	71.2	108.0	110
	460-3-60	8.4	70.0	1.3	2.6	5.0	None	--	--	19.4	25
							2CE04510746[2]	6.8	8.2	19.7	25
							2CE04511046[2]	10.1	12.1	24.7	25
							2CE04511546[2]	13.6	16.4	29.9	30
							2CE04512046[2]	19.5	23.5	38.8	40
							2CE04513046[2]	28.8	34.6	52.8	60
	575-3-60	7.0	53.0	1.3	2.0	4.0	None	--	--	15.8	20
							2CE04511058	10.6	10.2	20.2	25
							2CE04511558	15.9	15.3	26.6	30
							2CE04512058	21.2	20.4	33.0	35
							2CE04513058	30.4	29.3	44.1	45

1. HACR Type per NEC.
2. These electric heaters do not include a fuse box. If a fuse box is required to meet a local code (i.e. Chicago), the fuse block accessories 2FB04700825 and 2FB0470086 are available for field installation.

TABLE 12: ELECTRIC HEAT CORRECTION FACTORS

NOMINAL VOLTAGE	VOLTAGE	kW CAP. MULTIPLIER
208	208	1.00
240	230	0.92
480	460	0.92
600	575	0.92

TABLE 13: VOLTAGE LIMITATIONS[1]

POWER SUPPLY	VOLTAGE	
	MIN.	MAX.
208/230-1-60	187	252
208/230-3-60	187	252
460-3-60	432	504
575-3-60	540	630

1. Utilization Range “A” in accordance with ARI Standard 110.

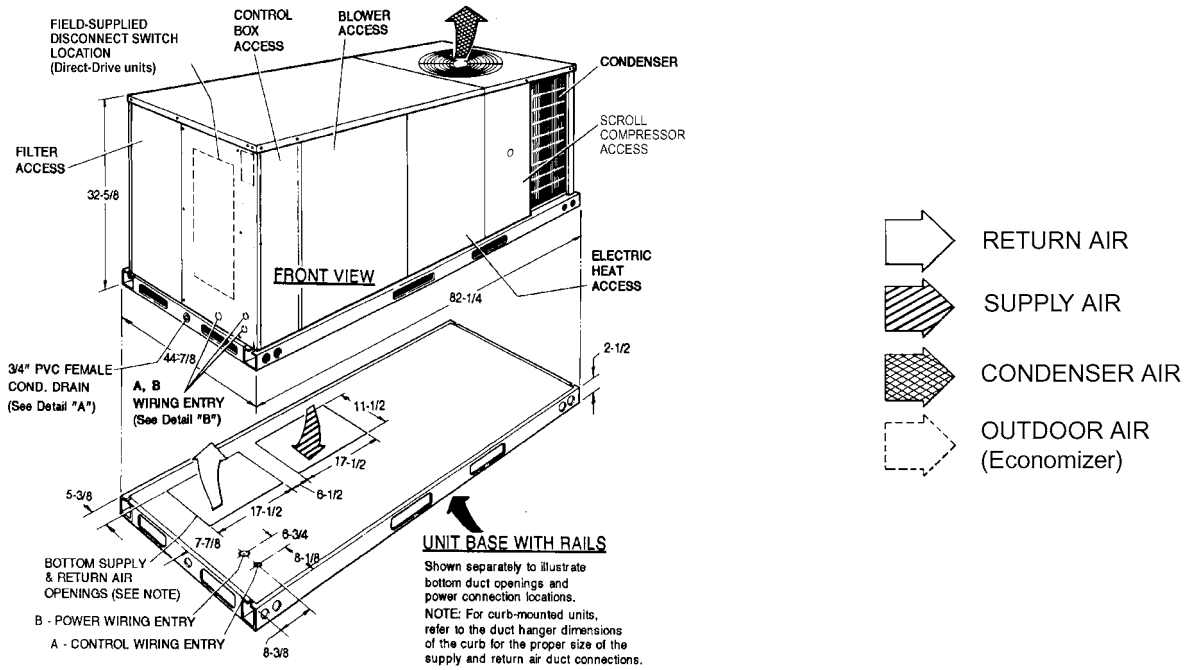


FIGURE 10 - UNIT DIMENSIONS (3 - 5 TON COOLING ONLY/ELECTRIC HEAT) FRONT VIEW

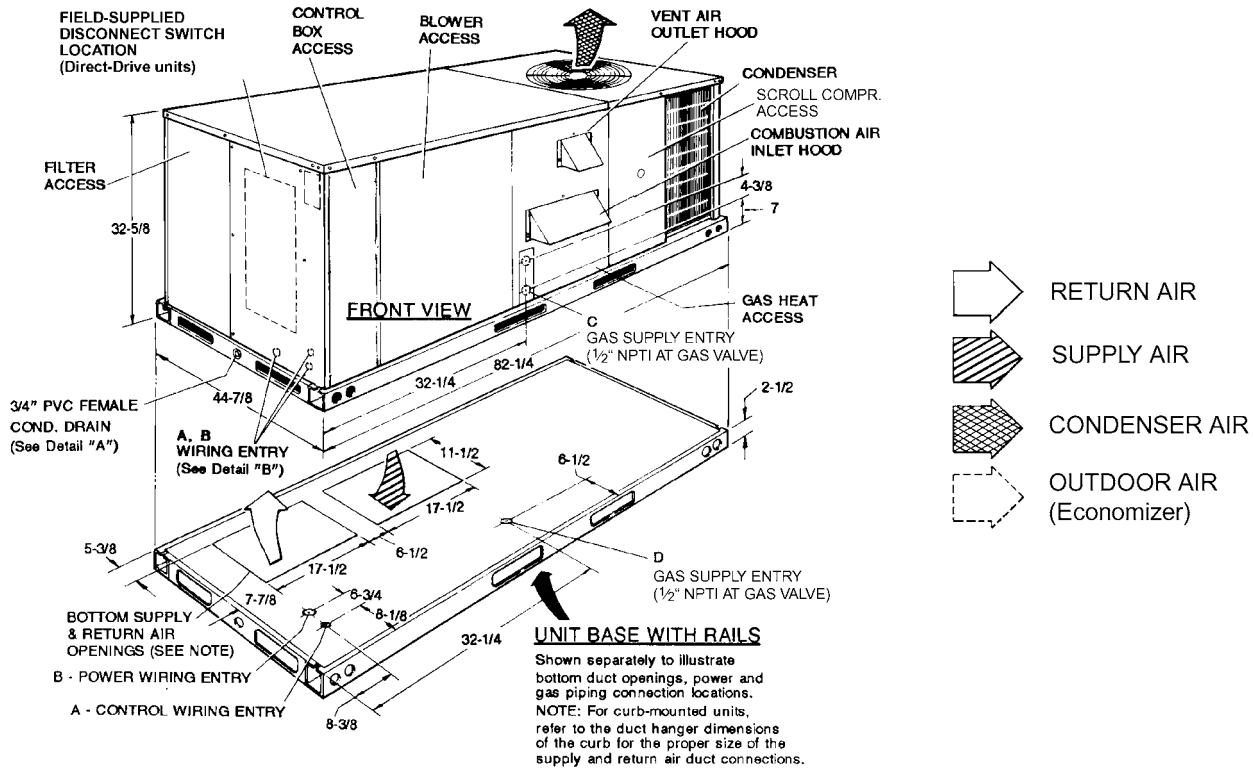


FIGURE 11 - UNIT DIMENSIONS (3 - 5 TON COOLING/GAS HEAT) FRONT VIEW

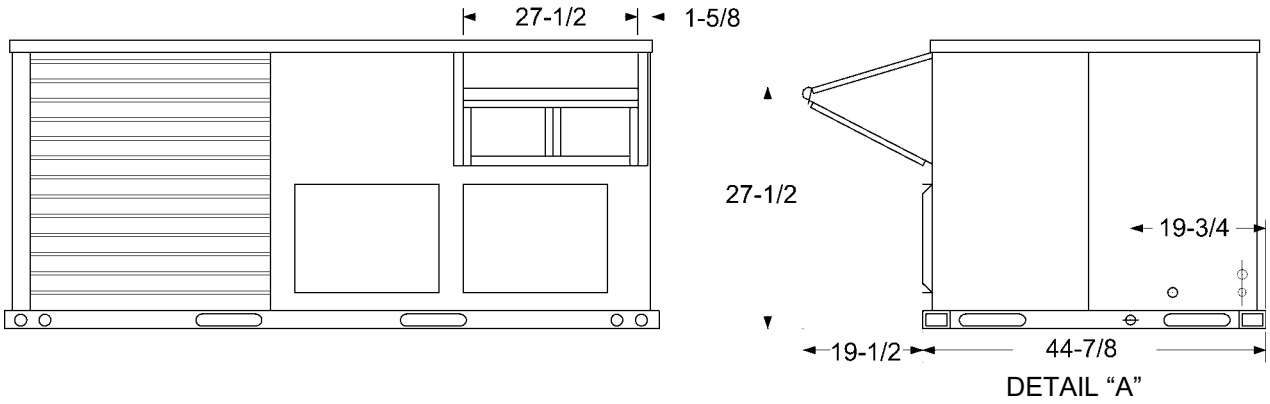
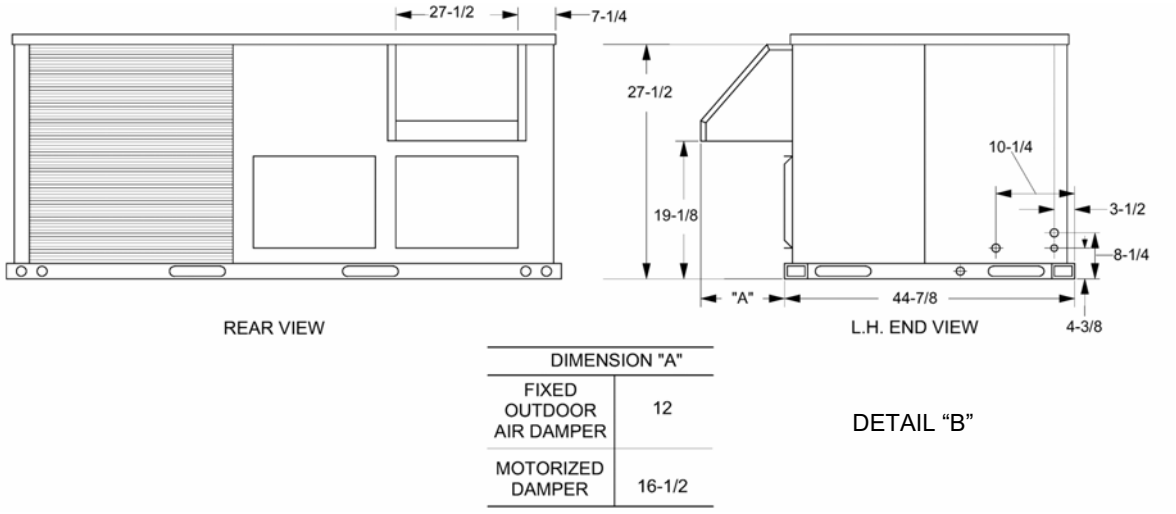
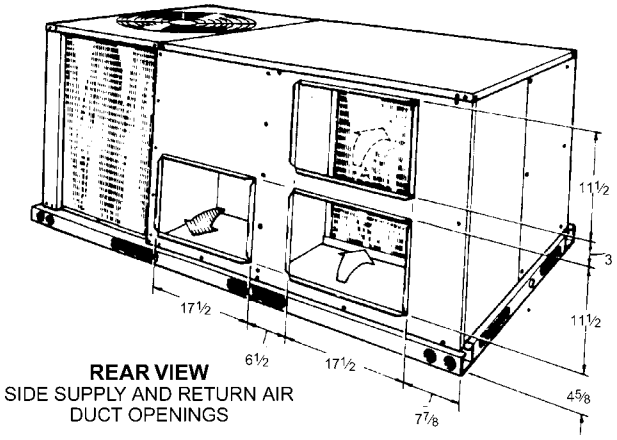


FIGURE 12 - UNIT WITH ECONOMIZER RAINHOOD



DIMENSION "A"	
FIXED OUTDOOR AIR DAMPER	12
MOTORIZED DAMPER	16-1/2

FIGURE 13 - UNIT WITH FIXED OUTDOOR AIR/MOTORIZED DAMPER RAINHOOD



DUCT COVERS - Units are shipped with all air duct openings covered.
For side duct applications;
1.Remove and discard the supply and return air duct covers.
2.Connect ductwork to duct flanges on the rear of the unit.
For bottom duct applications;
1. Remove the side supply air duct cover to gain access to the bottom supply air knockout panel.
2. Remove and discard the bottom knockout panel.
3. Replace the side duct cover.
4. With filter section access panel removed from the unit, remove and discard the bottom return air knockout panel.
5. Replace the filter access panel.

FIGURE 14 - UNIT DIMENSIONS (REAR VIEW)

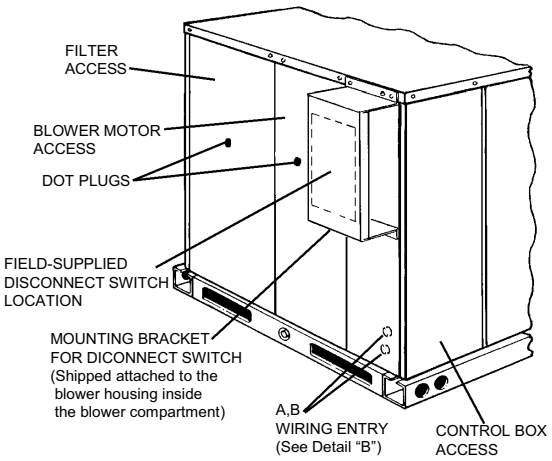

FILTER ACCESS
BLOWER MOTOR ACCESS
DOT PLUGS
FIELD-SUPPLIED DISCONNECT SWITCH LOCATION
MOUNTING BRACKET FOR DICONNECT SWITCH (Shipped attached to the blower housing inside the blower compartment)
A,B WIRING ENTRY (See Detail "B")
CONTROL BOX ACCESS
DISCONNECT SWITCH LOCATION AND MOTOR ACCESS PANEL FOR UNIT WITH "BELT-DRIVE" OPTION

FIGURE 15 - DISCONNECT/BLOWER ACCESS LOCATION

TABLE 14: UTILITIES ENTRY

HOLE	OPENING SIZE (DIA.)	USED FOR	
A	7/8" KO[1]	Control Wiring[2]	Side
			Bottom
B	2" KO[1]	Power Wiring	Side
			Bottom
C	1-5/8" KO	Gas Piping (Front)	
D	1-1/2" KO	Gas Piping (Bottom)	

1. Opening in the bottom to the unit can be located by the side in the insulation.
2. Do not remove the 2" knockout ring.

TABLE 15: MINIMUM CLEARANCES

LOCATION	CLEARANCE
Front	24" (Cooling/Electric Heat) 32" (Gas Heat)
Rear	12" (Less Economizer) 36" (With Economizer or Fixed Air/Motorized Damper)
Left Side (Filter Access)	24" (Less Economizer) 36" (With Economizer)
Right Side (Cond. Coil)	24"
Below Unit[1]	0"
Above Unit[2]	72" (For Condenser Air Discharge)

1. Units may be installed on combustible floors made from wood or class A, B, or C roof covering material.
2. Units must be installed outdoors. Overhanging structures or shrubs should not obstruct condenser air discharge outlet.

TABLE 16: DJ036 BLOWER PERFORMANCE - SIDE FLOW

ESP[1]	TURNS OPEN[2]																							
	0 Turns Open				1 Turn Open				2 Turns Open				3 Turns Open				4 Turns Open				5 Turns Open			
	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP
0.2	1979	879	713	0.76	1811	830	635	0.68	1641	781	563	0.60	1468	731	496	0.53	1293	681	436	0.47	1116	630	382	0.41
0.3	1791	880	677	0.73	1623	831	599	0.64	1453	781	527	0.57	1280	732	461	0.49	1105	682	401	0.43	928	631	347	0.37
0.4	1619	881	635	0.68	1451	832	557	0.60	1281	782	485	0.52	1108	733	419	0.45	933	683	359	0.38	----	----	----	----
0.5	1446	882	590	0.63	1277	833	512	0.55	1107	784	440	0.47	----	----	----	----	----	----	----	----	----	----	----	----
0.6	1252	883	543	0.58	1084	834	465	0.50	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
0.7	1020	885	497	0.53	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

1. External Static Pressure (ESP) is that available for supply and return duct system including internal losses from gas heat exchangers and 1" filters. See STATIC RESISTANCE table for additional applications.
2. TURNS OPEN = Setting of the variable pitch motor sheave where "0 Turns Open" is fully closed.

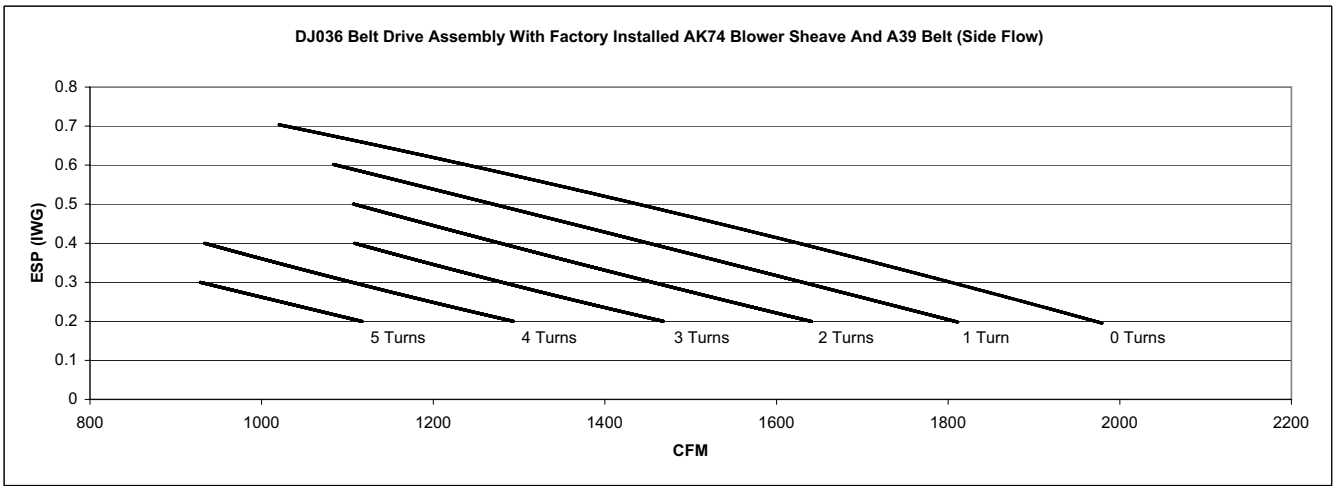


TABLE 17: DJ036 BLOWER PERFORMANCE W/FIELD INSTALLED BLOWER SHEAVE - SIDE FLOW

ESP[1]	TURNS OPEN[2]																							
	0 Turns Open				1 Turn Open				2 Turns Open				3 Turns Open				4 Turns Open				5 Turns Open			
	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP
0.2	----	----	----	----	----	----	----	----	2371	966	974	1.05	2123	904	845	0.91	1872	837	740	0.79	1618	765	657	0.71
0.3	----	----	----	----	2406	1023	1071	1.15	2162	967	919	0.99	1914	906	790	0.85	1663	839	684	0.73	1409	766	602	0.65
0.4	2458	1076	1202	1.29	2217	1025	1026	1.10	1972	969	873	0.94	1724	907	744	0.80	1473	840	638	0.68	1219	768	556	0.60
0.5	2283	1077	1161	1.25	2042	1026	985	1.06	1797	970	833	0.89	1549	908	704	0.75	1298	841	598	0.64	1044	769	516	0.55
0.6	2119	1078	1122	1.20	1878	1027	946	1.02	1633	971	794	0.85	1386	910	665	0.71	1135	843	559	0.60	----	----	----	----
0.7	1963	1080	1080	1.16	1721	1029	904	0.97	1477	973	752	0.81	1229	911	623	0.67	----	----	----	----	----	----	----	----
0.8	1810	1081	1031	1.11	1568	1030	855	0.92	1324	974	702	0.75	----	----	----	----	----	----	----	----	----	----	----	----
0.9	1657	1083	969	1.04	1415	1032	793	0.85	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
1.0	1500	1085	892	0.96	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

1. External Static Pressure (ESP) is that available for supply and return duct system including internal losses from gas heat exchangers and 1" filters. See STATIC RESISTANCE table for additional applications.
2. TURNS OPEN = Setting of the variable pitch motor sheave where "0 Turns Open" is fully closed.

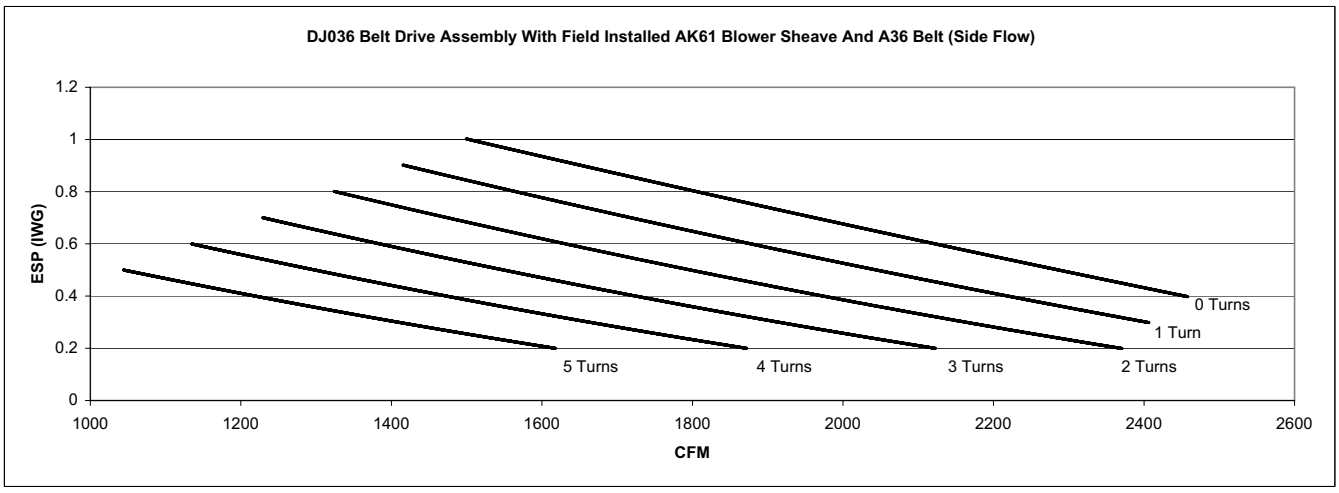


TABLE 18: DJ036 BLOWER PERFORMANCE - DOWN FLOW

ESP[1]	TURNS OPEN[2]																							
	0 Turns Open				1 Turn Open				2 Turns Open				3 Turns Open				4 Turns Open				5 Turns Open			
	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP
0.2	1903	881	660	0.71	1690	833	587	0.63	1501	784	519	0.56	1334	735	455	0.49	1190	684	395	0.42	1069	632	340	0.36
0.3	1704	882	631	0.68	1491	834	559	0.60	1302	785	490	0.53	1135	735	426	0.46	991	685	366	0.39	870	632	311	0.33
0.4	1507	882	596	0.64	1295	834	524	0.56	1105	786	455	0.49	938	736	391	0.42	794	685	332	0.36	----	----	----	----
0.5	1311	882	556	0.60	1099	835	483	0.52	909	786	415	0.44	742	736	351	0.38	----	----	----	----	----	----	----	----
0.6	1115	883	510	0.55	902	835	437	0.47	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
0.7	917	883	458	0.49	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

1. External Static Pressure (ESP) is that available for supply and return duct system including internal losses from gas heat exchangers and 1" filters. See STATIC RESISTANCE table for additional applications.
2 TURNS OPEN = Setting of the variable pitch motor sheave where "0 Turns Open" is fully closed.

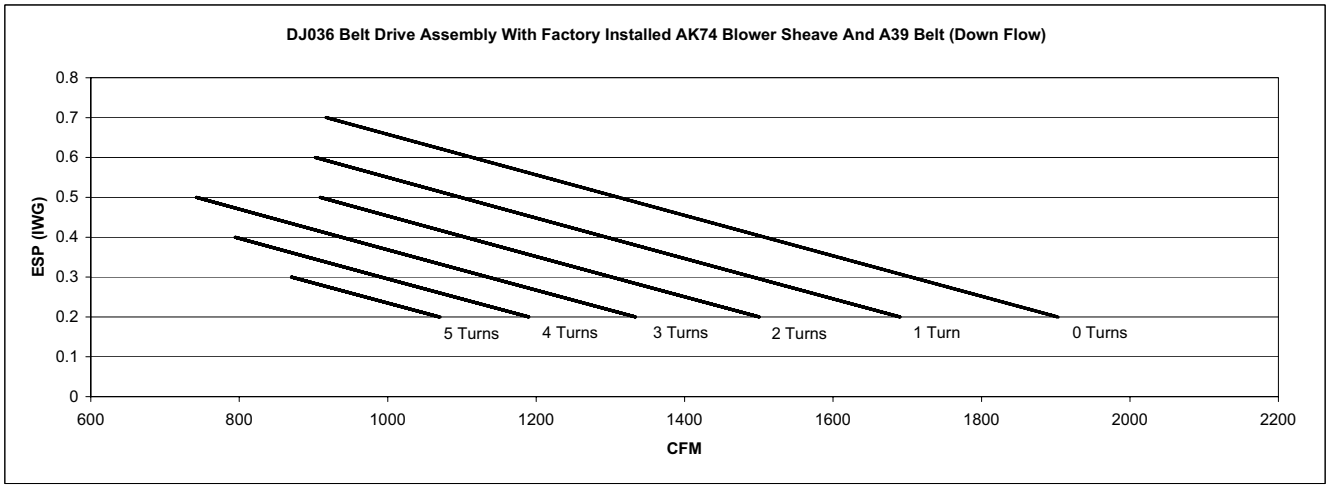


TABLE 19: DJ036 BLOWER PERFORMANCE W/FIELD INSTALLED BLOWER SHEAVE - DOWN FLOW

ESP[1]	TURNS OPEN[2]																							
	0 Turns Open				1 Turn Open				2 Turns Open				3 Turns Open				4 Turns Open				5 Turns Open			
	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP
0.2	2522	1083	1084	1.16	2295	1024	933	1.00	2080	965	801	0.86	1878	907	688	0.74	1689	848	593	0.64	1512	790	516	0.55
0.3	2350	1084	1056	1.13	2122	1025	905	0.97	1908	967	772	0.83	1706	908	659	0.71	1516	850	564	0.61	1340	791	488	0.52
0.4	2194	1085	1020	1.09	1967	1027	870	0.93	1752	968	737	0.79	1550	909	624	0.67	1361	851	529	0.57	1184	793	452	0.49
0.5	2051	1087	979	1.05	1824	1028	828	0.89	1609	969	696	0.75	1407	910	583	0.63	1218	852	488	0.52	1041	794	411	0.44
0.6	1915	1088	933	1.00	1688	1029	782	0.84	1473	970	650	0.70	1271	912	536	0.58	1082	853	442	0.47	----	----	----	----
0.7	1783	1089	883	0.95	1555	1030	732	0.79	1340	971	600	0.64	1138	913	486	0.52	----	----	----	----	----	----	----	----
0.8	1648	1091	829	0.89	1421	1032	678	0.73	1206	973	545	0.59	----	----	----	----	----	----	----	----	----	----	----	----
0.9	1507	1092	772	0.83	1280	1033	621	0.67	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
1.0	1356	1094	713	0.76	1128	1035	562	0.60	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

1. External Static Pressure (ESP) is that available for supply and return duct system including internal losses from gas heat exchangers and 1" filters. See STATIC RESISTANCE table for additional applications.
2. TURNS OPEN = Setting of the variable pitch motor sheave where "0 Turns Open" is fully closed.

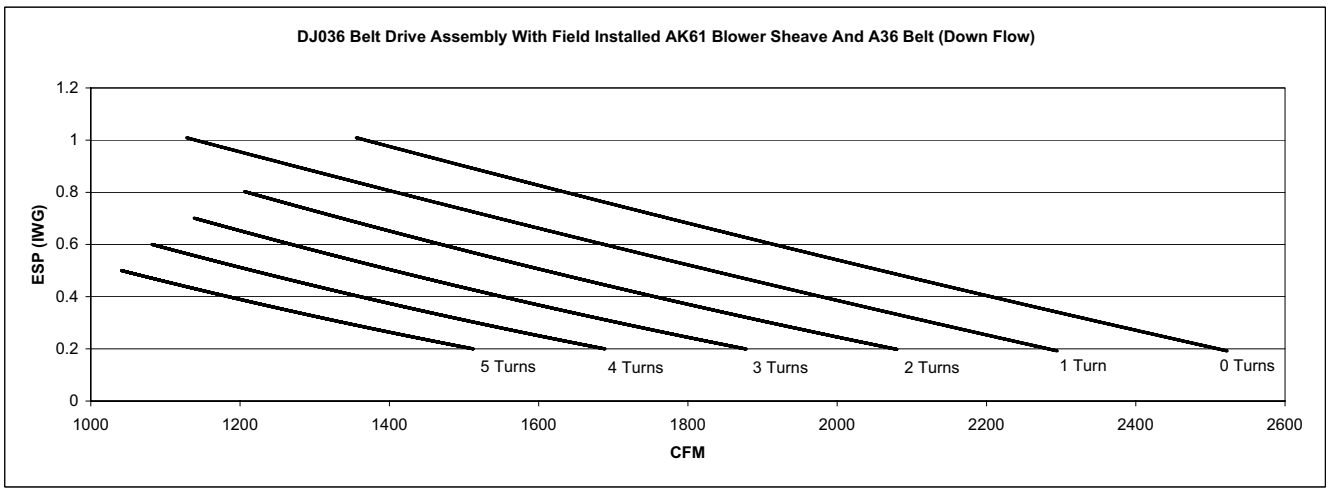


TABLE 20: DJ048 BLOWER PERFORMANCE - SIDE FLOW

ESP[1]	TURNS OPEN[2]																							
	0 Turns Open				1 Turn Open				2 Turns Open				3 Turns Open				4 Turns Open				5 Turns Open			
	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP
0.2	----	----	----	----	----	----	----	----	2164	967	920	0.99	1939	905	797	0.85	1713	838	697	0.75	1484	766	620	0.67
0.3	----	----	----	----	2211	1025	1024	1.10	1988	968	877	0.94	1763	907	754	0.81	1536	840	654	0.70	1307	767	577	0.62
0.4	2270	1077	1157	1.24	2048	1026	987	1.06	1825	970	840	0.90	1600	908	716	0.77	1373	841	616	0.66	1145	768	540	0.58
0.5	2119	1078	1121	1.20	1897	1027	951	1.02	1674	971	804	0.86	1449	909	681	0.73	1222	842	581	0.62	993	769	504	0.54
0.6	1975	1079	1084	1.16	1753	1028	914	0.98	1530	972	767	0.82	1305	910	643	0.69	1078	843	543	0.58	----	----	----	----
0.7	1835	1081	1040	1.12	1613	1030	870	0.93	1390	973	724	0.78	1165	912	600	0.64	----	----	----	----	----	----	----	----
0.8	1696	1083	988	1.06	1474	1032	818	0.88	1251	975	671	0.72	----	----	----	----	----	----	----	----	----	----	----	----
0.9	1554	1085	922	0.99	1332	1034	751	0.81	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
1.0	1406	1087	838	0.90	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

1. External Static Pressure (ESP) is that available for supply and return duct system including internal losses from gas heat exchangers and 1" filters. See STATIC RESISTANCE table for additional applications.
2. TURNS OPEN = Setting of the variable pitch motor sheave where "0 Turns Open" is fully closed.

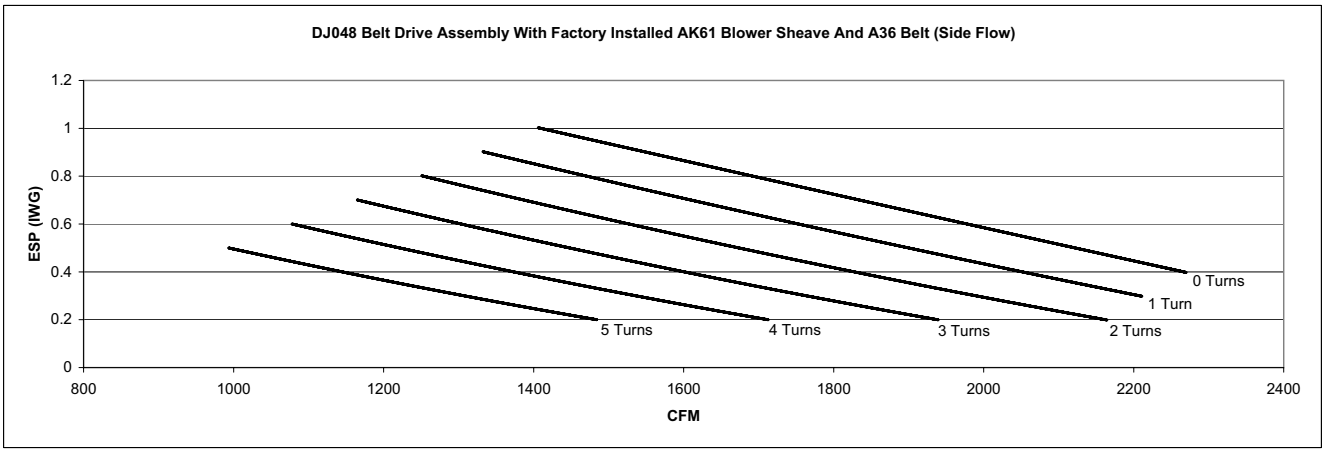


TABLE 21: DJ048 BLOWER PERFORMANCE W/FIELD INSTALLED BLOWER SHEAVE - SIDE FLOW

ESP[1]	TURNS OPEN[2]																							
	0 Turns Open				1 Turn Open				2 Turns Open				3 Turns Open				4 Turns Open				5 Turns Open			
	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP
0.2	----	----	----	----	2570	1101	1263	1.36	2350	1036	1106	1.19	2130	971	947	1.02	1912	906	786	0.84	1695	840	623	0.67
0.3	2618	1166	1410	1.51	2396	1101	1255	1.35	2175	1036	1098	1.18	1956	971	939	1.01	1738	906	778	0.84	1521	840	616	0.66
0.4	2463	1167	1379	1.48	2241	1102	1224	1.31	2021	1037	1067	1.14	1801	972	908	0.97	1583	907	747	0.80	1366	841	585	0.63
0.5	2324	1168	1329	1.43	2102	1104	1174	1.26	1882	1039	1017	1.09	1662	974	858	0.92	1444	908	697	0.75	1227	843	535	0.57
0.6	2197	1171	1264	1.36	1975	1106	1109	1.19	1754	1041	952	1.02	1535	976	793	0.85	1317	911	632	0.68	1100	845	469	0.50
0.7	2078	1173	1189	1.28	1856	1109	1033	1.11	1635	1044	876	0.94	1416	979	717	0.77	1198	913	557	0.60	----	----	----	----
0.8	1963	1176	1106	1.19	1741	1112	951	1.02	1521	1047	794	0.85	1301	982	635	0.68	----	----	----	----	----	----	----	----
0.9	1849	1179	1022	1.10	1627	1115	867	0.93	1407	1050	709	0.76	----	----	----	----	----	----	----	----	----	----	----	----
1	1732	1182	939	1.01	1510	1118	784	0.84	1289	1053	627	0.67	----	----	----	----	----	----	----	----	----	----	----	----
1.1	1607	1185	862	0.92	1386	1120	707	0.76	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
1.2	1472	1187	796	0.85	1251	1122	640	0.69	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
1.3	1323	1188	743	0.80	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

1. External Static Pressure (ESP) is that available for supply and return duct system including internal losses from gas heat exchangers and 1" filters. See STATIC RESISTANCE table for additional applications.
2. TURNS OPEN = Setting of the variable pitch motor sheave where "0 Turns Open" is fully closed.

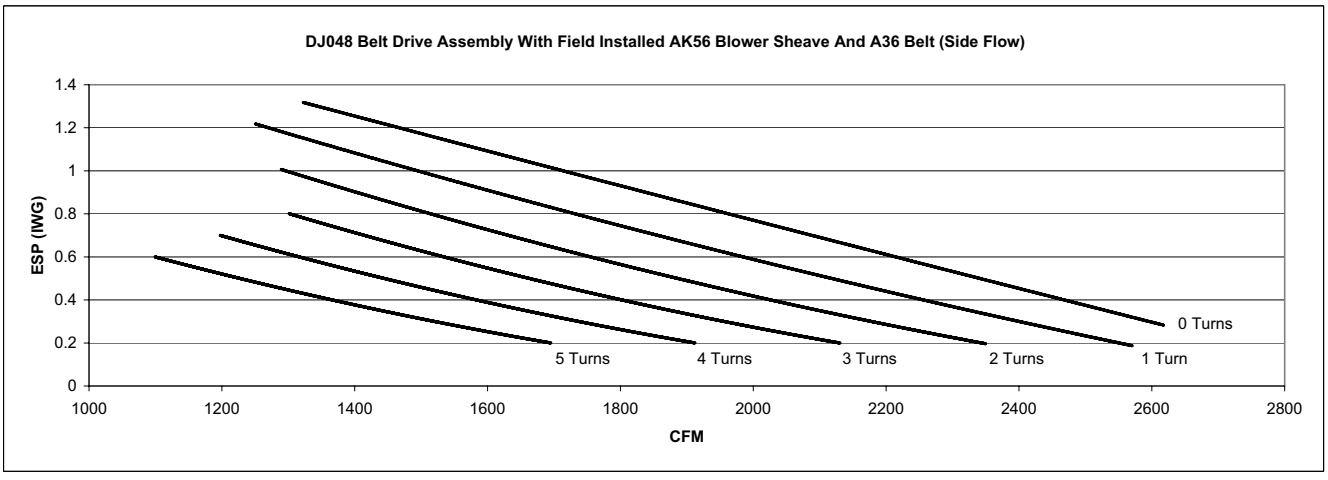


TABLE 22: DJ048 BLOWER PERFORMANCE - DOWN FLOW

ESP[1]	TURNS OPEN[2]																							
	0 Turns Open				1 Turn Open				2 Turns Open				3 Turns Open				4 Turns Open				5 Turns Open			
	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP
0.2	2336	1084	1047	1.12	2126	1025	903	0.97	1928	966	776	0.83	1743	908	666	0.71	1569	849	575	0.62	1408	791	502	0.54
0.3	2189	1086	1018	1.09	1979	1026	873	0.94	1781	968	746	0.80	1596	909	637	0.68	1422	850	546	0.59	1261	792	472	0.51
0.4	2054	1087	982	1.05	1844	1028	837	0.90	1646	969	710	0.76	1461	910	601	0.64	1287	851	510	0.55	1126	793	436	0.47
0.5	1928	1088	940	1.01	1718	1029	795	0.85	1520	970	668	0.72	1334	911	559	0.60	1161	852	468	0.50	1000	794	395	0.42
0.6	1805	1089	894	0.96	1595	1030	749	0.80	1398	971	622	0.67	1212	912	513	0.55	1039	854	422	0.45	----	----	----	----
0.7	1683	1090	844	0.91	1473	1031	699	0.75	1275	972	572	0.61	1090	913	463	0.50	----	----	----	----	----	----	----	----
0.8	1556	1092	792	0.85	1346	1032	647	0.69	1149	974	520	0.56	----	----	----	----	----	----	----	----	----	----	----	----
0.9	1422	1093	737	0.79	1212	1034	593	0.64	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
1.0	1275	1095	683	0.73	1065	1036	538	0.58	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

1. External Static Pressure (ESP) is that available for supply and return duct system including internal losses from gas heat exchangers and 1" filters. See STATIC RESISTANCE table for additional applications.
2. TURNS OPEN = Setting of the variable pitch motor sheave where "0 Turns Open" is fully closed.

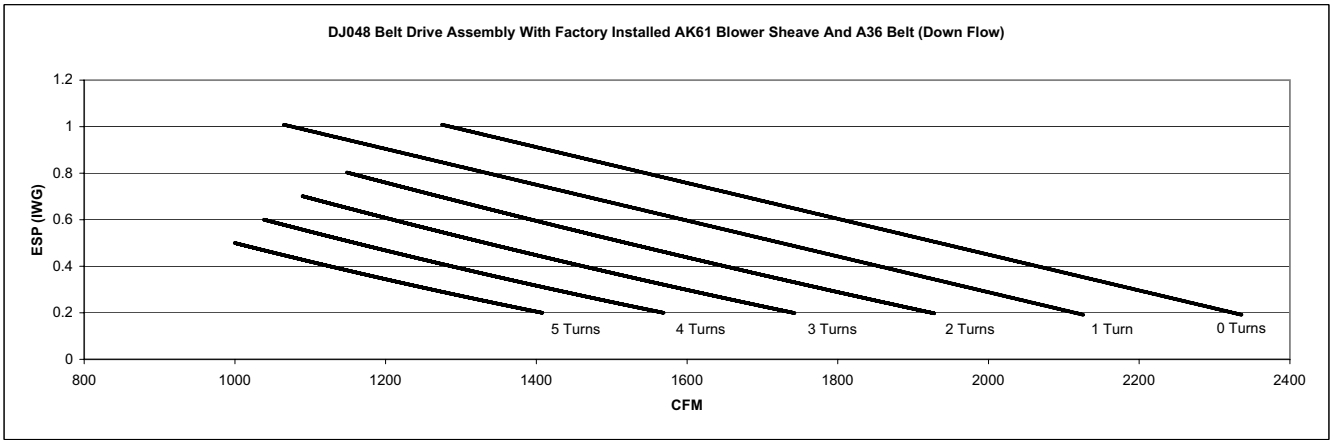


TABLE 23: DJ048 BLOWER PERFORMANCE W/FIELD INSTALLED BLOWER SHEAVE - DOWN FLOW

ESP[1]	TURNS OPEN[2]																							
	0 Turns Open				1 Turn Open				2 Turns Open				3 Turns Open				4 Turns Open				5 Turns Open			
	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP
0.2	2624	1171	1332	1.43	2390	1103	1133	1.22	2164	1035	957	1.03	1944	968	804	0.86	1731	901	674	0.72	1525	834	567	0.61
0.3	2483	1172	1296	1.39	2250	1104	1097	1.18	2024	1036	920	0.99	1804	969	767	0.82	1591	902	637	0.68	1385	835	531	0.57
0.4	2354	1173	1258	1.35	2121	1105	1058	1.14	1894	1038	882	0.95	1675	970	729	0.78	1462	903	599	0.64	1256	837	492	0.53
0.5	2233	1175	1217	1.31	2000	1107	1018	1.09	1773	1039	842	0.90	1554	972	689	0.74	1341	905	559	0.60	1135	838	452	0.49
0.6	2118	1176	1175	1.26	1884	1109	975	1.05	1658	1041	799	0.86	1438	974	646	0.69	1225	907	516	0.55	1019	840	409	0.44
0.7	2006	1178	1129	1.21	1772	1110	930	1.00	1546	1043	754	0.81	1326	975	601	0.64	1113	909	471	0.50	----	----	----	----
0.8	1894	1181	1080	1.16	1661	1113	881	0.94	1434	1045	704	0.76	1214	978	551	0.59	----	----	----	----	----	----	----	----
0.9	1780	1183	1027	1.10	1547	1115	828	0.89	1321	1047	652	0.70	----	----	----	----	----	----	----	----	----	----	----	----
1	1662	1185	970	1.04	1429	1117	771	0.83	1203	1050	595	0.64	----	----	----	----	----	----	----	----	----	----	----	----
1.1	1537	1188	909	0.97	1304	1120	710	0.76	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
1.2	1403	1191	842	0.90	1169	1123	643	0.69	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
1.3	1256	1194	771	0.83	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

1. External Static Pressure (ESP) is that available for supply and return duct system including internal losses from gas heat exchangers and 1" filters. See STATIC RESISTANCE table for additional applications.
2. TURNS OPEN = Setting of the variable pitch motor sheave where "0 Turns Open" is fully closed.

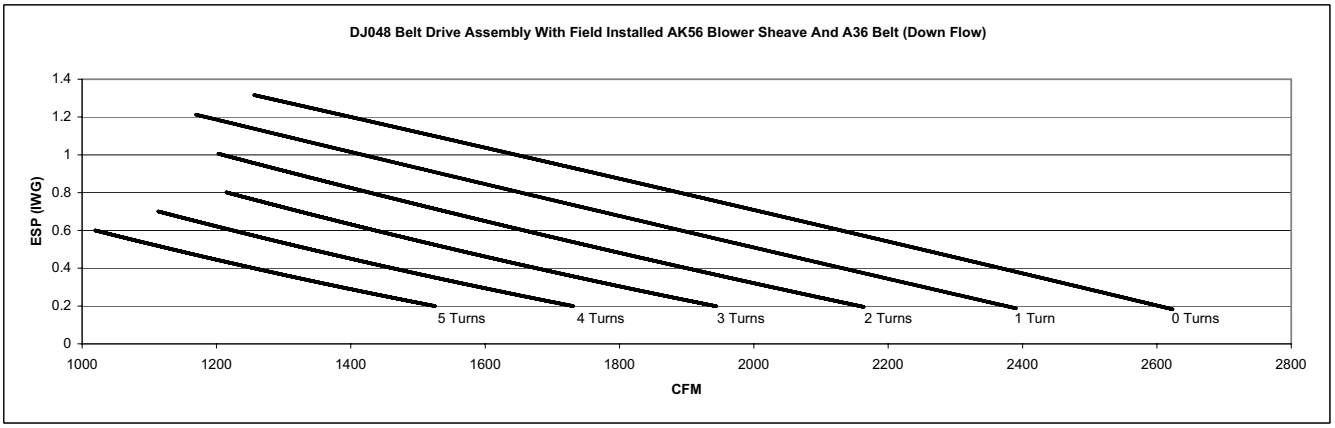


TABLE 24: DJ060 BLOWER PERFORMANCE - SIDE FLOW

ESP[1]	TURNS OPEN[2]																							
	0 Turns Open				1 Turn Open				2 Turns Open				3 Turns Open				4 Turns Open				5 Turns Open			
	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP
0.2	----	----	----	----	2570	1101	1263	1.36	2350	1036	1106	1.19	2130	971	947	1.02	1912	906	786	0.84	1695	840	623	0.67
0.3	2618	1166	1410	1.51	2396	1101	1255	1.35	2175	1036	1098	1.18	1956	971	939	1.01	1738	906	778	0.84	1521	840	616	0.66
0.4	2463	1167	1379	1.48	2241	1102	1224	1.31	2021	1037	1067	1.14	1801	972	908	0.97	1583	907	747	0.80	1366	841	585	0.63
0.5	2324	1168	1329	1.43	2102	1104	1174	1.26	1882	1039	1017	1.09	1662	974	858	0.92	1444	908	697	0.75	1227	843	535	0.57
0.6	2197	1171	1264	1.36	1975	1106	1109	1.19	1754	1041	952	1.02	1535	976	793	0.85	1317	911	632	0.68	1100	845	469	0.50
0.7	2078	1173	1189	1.28	1856	1109	1033	1.11	1635	1044	876	0.94	1416	979	717	0.77	1198	913	557	0.60	----	----	----	----
0.8	1963	1176	1106	1.19	1741	1112	951	1.02	1521	1047	794	0.85	1301	982	635	0.68	----	----	----	----	----	----	----	----
0.9	1849	1179	1022	1.10	1627	1115	867	0.93	1407	1050	709	0.76	----	----	----	----	----	----	----	----	----	----	----	----
1	1732	1182	939	1.01	1510	1118	784	0.84	1289	1053	627	0.67	----	----	----	----	----	----	----	----	----	----	----	----
1.1	1607	1185	862	0.92	1386	1120	707	0.76	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
1.2	1472	1187	796	0.85	1251	1122	640	0.69	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
1.3	1323	1188	743	0.80	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

1. External Static Pressure (ESP) is that available for supply and return duct system including internal losses from gas heat exchangers and 1" filters. See STATIC RESISTANCE table for additional applications.
2. TURNS OPEN = Setting of the variable pitch motor sheave where "0 Turns Open" is fully closed.

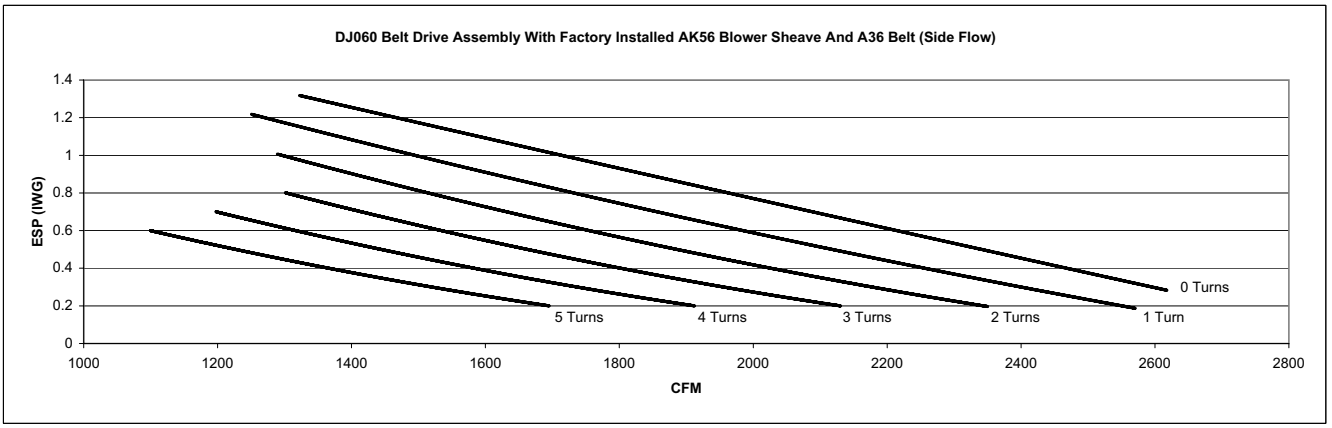


TABLE 25: DJ060 BLOWER PERFORMANCE - DOWN FLOW

ESP[1]	TURNS OPEN[2]																							
	0 Turns Open				1 Turn Open				2 Turns Open				3 Turns Open				4 Turns Open				5 Turns Open			
	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP	CFM	RPM	WATTS	BHP
0.2	2624	1171	1332	1.43	2390	1103	1133	1.22	2164	1035	957	1.03	1944	968	804	0.86	1731	901	674	0.72	1525	834	567	0.61
0.3	2483	1172	1296	1.39	2250	1104	1097	1.18	2024	1036	920	0.99	1804	969	767	0.82	1591	902	637	0.68	1385	835	531	0.57
0.4	2354	1173	1258	1.35	2121	1105	1058	1.14	1894	1038	882	0.95	1675	970	729	0.78	1462	903	599	0.64	1256	837	492	0.53
0.5	2233	1175	1217	1.31	2000	1107	1018	1.09	1773	1039	842	0.90	1554	972	689	0.74	1341	905	559	0.60	1135	838	452	0.49
0.6	2118	1176	1175	1.26	1884	1109	975	1.05	1658	1041	799	0.86	1438	974	646	0.69	1225	907	516	0.55	1019	840	409	0.44
0.7	2006	1178	1129	1.21	1772	1110	930	1.00	1546	1043	754	0.81	1326	975	601	0.64	1113	909	471	0.50	----	----	----	----
0.8	1894	1181	1080	1.16	1661	1113	881	0.94	1434	1045	704	0.76	1214	978	551	0.59	----	----	----	----	----	----	----	----
0.9	1780	1183	1027	1.10	1547	1115	828	0.89	1321	1047	652	0.70	----	----	----	----	----	----	----	----	----	----	----	----
1	1662	1185	970	1.04	1429	1117	771	0.83	1203	1050	595	0.64	----	----	----	----	----	----	----	----	----	----	----	----
1.1	1537	1188	909	0.97	1304	1120	710	0.76	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
1.2	1403	1191	842	0.90	1169	1123	643	0.69	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
1.3	1256	1194	771	0.83	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

1. External Static Pressure (ESP) is that available for supply and return duct system including internal losses from gas heat exchangers and 1" filters. See STATIC RESISTANCE table for additional applications.
2. TURNS OPEN = Setting of the variable pitch motor sheave where "0 Turns Open" is fully closed.

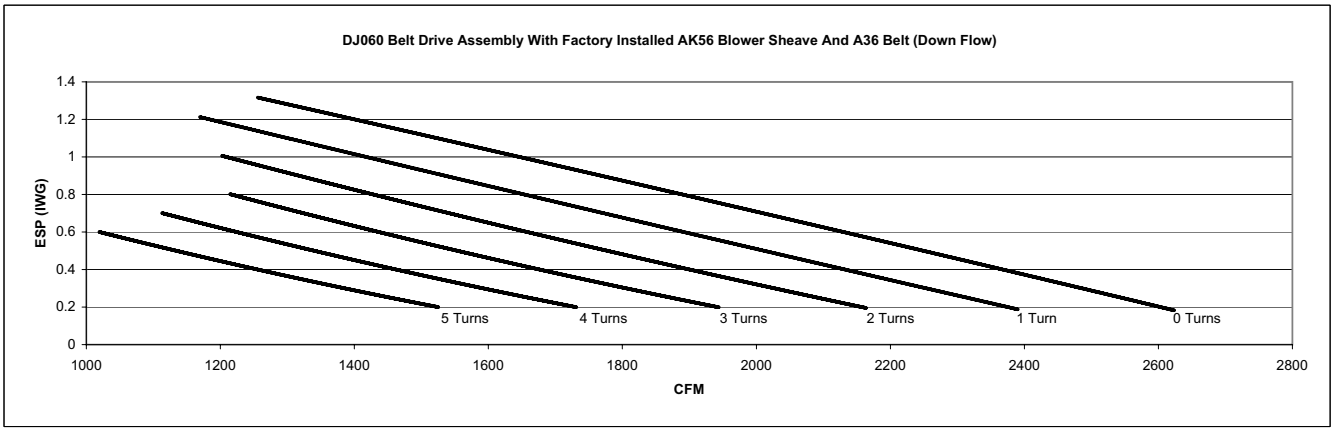


TABLE 26: BELT DRIVE BLOWER MOTOR AND DRIVE DATA

MODEL SIZE	BLOWER RANGE (RPM)	MOTOR[1]		ADJUSTABLE MOTOR PULLEY				FIXED BLOWER PULLEY				BELT (NOTCHED)		
		HP	FRAME	DESIG-NATION	OUTSIDE DIA. (IN.)	PITCH DIA. (IN.)	BORE (IN.)	DESIG-NATION	OUTSIDE DIA. (IN.)	PITCH DIA. (IN.)	BORE (IN.)	DESIG-NATION	PITCH LENGTH (IN.)	QTY.
DJ036	600/920	1-1/2	56	1VL40	2.7-3.7	2.4-3.4	5/8	AK74	7.2	7.0	1	A39	40.3	1
DJ048	790/1120	1-1/2	56	1VL40	2.7-3.7	2.4-3.4	5/8	AK61	5.9	5.7	1	A36	37.3	1
DJ060	850/1220	1-1/2	56	1VL40	2.7-3.7	2.4-3.4	5/8	AK56	5.4	5.2	1	A36	37.3	1

1. All motors have solid bases and are inherently protected. These motors can be selected to operate into their service factor because they are located in the moving air, upstream of any heating device.

TABLE 27: STATIC RESISTANCES

DESCRIPTION		RESISTANCE, IWG CFM										
		1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000
ECONOMIZER[1 2]		0.07	0.08	0.09	0.11	0.13	0.15	0.17	0.20	0.23	0.26	0.30
ELECTRIC HEATERS[1]	7-15 KW	0.04	0.05	0.06	0.07	0.08	0.10	0.12	0.14	0.16	0.19	0.22
	20-30 KW[3]	0.06	0.07	0.08	0.09	0.11	0.13	0.15	0.17	0.20	0.23	0.26
COOLING ONLY		0.08	0.10	0.12	0.14	0.16	0.18	0.20	0.23	0.26	0.29	0.32

1. Deduct these resistance values from the available external static pressure shown in SUPPLY AIR BLOWER PERFORMANCE Tables.
2. The pressure through the economizer is greater for 100% outdoor air than for 100% return air. If the resistance of the return air duct system is less than 0.25 IWG, the unit will deliver less CFM during full economizer operation.
3. Add these resistance values to the available static resistance values on SUPPLY AIR BLOWER PERFORMANCE Tables.

PHASING

Check for proper compressor rotation. If the blower or compressors rotate in the wrong direction at start-up, the electrical connection to the unit is misphased. Change the incoming line connection phasing to obtain proper rotation. (Scroll compressors operate in only one direction. If the scroll is drawing low amperage, has similar suction and discharge pressures, or producing a high noise level, the scroll is misphased).

⚠ CAUTION

Scroll compressors require proper rotation to operate correctly. Do not change the internal wiring to make the blower, condenser fans, or compressor rotate correctly. Change the incoming power to the main terminal block to obtain proper rotation.

SUPPLY AIR BLOWERS

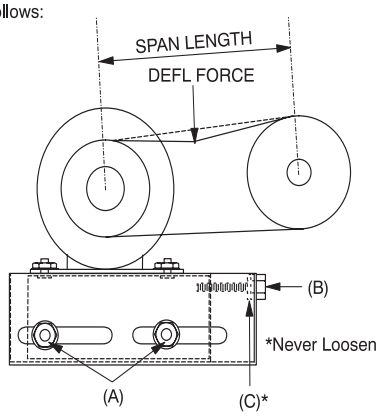
These blowers have single speed motors equipped with a belt drive. Belt drive units have a variable pitch pulley that allows the blower speed to be adjusted.

CHECKING SUPPLY AIR CFM

The RPM of the supply air blower will depend on the required CFM, the unit accessories or options and the static resistances of both the supply and the return air duct systems. With this information, the motor pulley number of turns open (belt drive) can be determined from the Blower Performance Data Tables.

PROCEDURE FOR ADJUSTING BELT TENSION:

1. Loosen nuts (A) (top and bottom).
2. Adjust the tension by turning bolt (B).
3. Never loosen nuts (C) from each other.
4. Use a belt tension checker to apply a perpendicular force to be one belt at the midpoint of the span as shown. The deflection force should be applied until a specific deflection distance of 4mm (5/32") is obtained. To determine the deflection distance from normal position, use a straight edge from sheave to sheave as a reference line. The recommended deflection force is as follows:



Tension new belts at the max. deflection force recommended for the belt section. Check the belt tension at least two times during the first 24 hours of operation. Any re-tensioning should fall between the min. and max. deflection force values.

5. After adjusting, re-tighten nuts (A).

FIGURE 16 - BELT ADJUSTMENT

Note the following:

1. The supply air CFM must be within the limitations shown in the Unit Application Data Table 1.

2. Pulleys can be adjusted in half turn increments.
3. The tension on the belt should be adjusted as shown in the Belt Adjustment Figure 16.

Start the supply air blower motor. Adjust the resistances in both the supply and the return air duct systems to balance the air distribution throughout the conditioned space. The job specifications may require that this balancing be done by someone other than the equipment installer.

To check the supply air CFM after the initial balancing has been completed:

1. Remove the two 5/16” dot plugs from the blower motor and the filter access panels shown in Figure 15.
2. Insert at least 8" of 1/4 inch tubing into each of these holes for sufficient penetration into the air flow on both sides of the indoor coil.

NOTE: The tubes must be inserted and held in a position perpendicular to the air flow so that velocity pressure will not affect the static pressure readings.

3. Using an inclined manometer, determine the pressure drop across a dry evaporator coil. Since the moisture on an evaporator coil may vary greatly, measuring the pressure drop across a wet coil under field conditions would be inaccurate. To assure a dry coil, the compressors should be deactivated while the test is being run.

4. Knowing the pressure drop across a dry coil, the actual CFM through the unit can be determined from the curve in Pressure Drop vs. Supply Air CFM (Figure 17).

⚠WARNING

Failure to properly adjust the total system air quantity and static pressure can result in extensive system damage.

After readings have been obtained, remove the tubes and reinstall the two 5/16” dot plugs that were removed in Step 1.

NOTE: De-energize the compressors before taking any test measurements to assure a dry indoor coil.

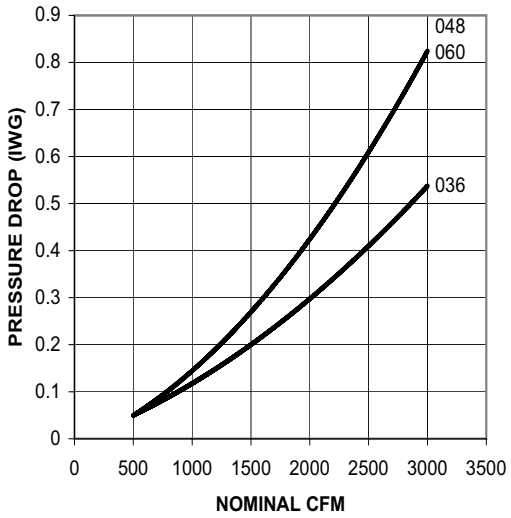


FIGURE 17 - PRESSURE DROP ACROSS COIL

OPERATION

SEQUENCE OF OPERATIONS OVERVIEW

For these units, the thermostat makes a circuit between “R” and “Y1” for the cooling cycle.

The call is passed to the unit control board (UCB), which then determines whether the requested operation is available and, if so, which components to energize.

For gas heating, the UCB monitors the “W1” call but does not handle the operation of the gas furnace. An ignition control board controls the gas heater operation.

For electric heat units, the UCB passes the call to the electric heater.

In both cases, when the “W1” call is sensed, the indoor air blower is energized following a specified heating delay.

If at any time a call for both heating and cooling are present, the heating operation will be performed. If operating, the cooling system is halted as with a completion of a call for cooling. Heating always takes priority.

COOLING SEQUENCE OF OPERATION

CONTINUOUS BLOWER

By setting the room thermostat fan switch to “ON,” the supply air blower will operate continuously.

INTERMITTENT BLOWER

With the room thermostat fan switch set to “AUTO” and the system switch set to either the “AUTO” or “HEAT” settings, the blower is energized whenever a cooling or heating operation is requested. The blower is energized after any specified delay associated with the operation.

When energized, the indoor blower has a minimum run time of 30 seconds. Additionally, the indoor blower has a delay of 10 seconds between operations.

NO OUTDOOR AIR OPTIONS

When the thermostat calls for cooling, the low-voltage control circuit from “R” to “Y1” and “G” is completed. The compressor and condenser fan motor are energized. After completing the specified fan on delay for cooling, the UCB will energize the blower motor.

Once the thermostat has been satisfied, it will de-energize Y1. If the compressor has satisfied its minimum run time, the compressor and condenser fan de-energize. Otherwise, the unit operates the cooling system until the minimum run time for the compressor has been completed. After the compressor de-energizes, the blower is stopped following the elapse of the fan off delay for cooling.

To be available, a compressor must not be locked-out due to a high or low-pressure switch or freezestat trip and the anti-short cycle delay (ASCD) must have elapsed.

ECONOMIZER WITH SINGLE ENTHALPY SENSOR

When the room thermostat calls for cooling, the low voltage control circuit from “R” to “G” and “Y1” is completed. The UCB energizes the blower motor (if the fan switch on the room thermostat is set in the “AUTO” position) and drives the economizer dampers from fully closed to their minimum position. If the enthalpy of the outdoor air is below the setpoint of the enthalpy controller (previously determined), “Y1” energizes the economizer. The dampers will modulate to maintain a constant supply air temperature as monitored by the discharge air sensor. If the outdoor air enthalpy is above the setpoint, “Y1” energizes the compressor and condenser fan motor only.

Once the thermostat has been satisfied, it will de-energize “Y1”. If the compressor has satisfied its minimum run time, the compressor and condenser fan are de-energized. Otherwise, the unit operates the cooling system until the minimum run times for the compressor has been completed. After the compressor de-energizes, the blower is stopped following the elapse of the fan off delay for cooling, and the economizer damper goes to the closed position. If the unit is in continues fan operation the economizer damper goes to the min. position.

ECONOMIZER WITH DUAL ENTHALPY SENSORS

The operation with the dual enthalpy sensors is identical to the single sensor except that a second enthalpy sensor is mounted in the return air. This return air sensor allows the economizer to choose between outdoor air and return air, whichever has the lowest enthalpy value, to provide maximum operating efficiency.

ECONOMIZER (SINGLE OR DUAL) WITH POWER EXHAUST

This system operates as specified above with one addition. The power exhaust motor is energized 45 seconds after the actuator position exceeds the exhaust fan setpoint on the economizer control. When the power exhaust is operating, the second stage of mechanical cooling will not operate. As always, the “R” to “G” connection provides minimum position but does not provide power exhaust operation.

MOTORIZED OUTDOOR AIR DAMPERS

This system operation is the same as the units with no outdoor air options with one exception. When the “R” to “G” circuit is complete, the motorized damper drives open to a position set by the thumbnail on the damper motor. When the “R” to “G” circuit is opened, the damper spring returns fully closed.

COOLING OPERATION ERRORS

Each cooling system is monitored for operation outside of the intended parameters. Errors are handled as described below. All system errors override minimum run times for compressors.

HIGH-PRESSURE LIMIT SWITCH

During cooling operation, if a high-pressure limit switch opens, the UCB will de-energize the compressor, initiate the ASCD (Anti-short cycle delay), and, stop the condenser fan. If the call for cooling is still present at the conclusion of the ASCD, the UCB will re-energize the compressor.

Should a high-pressure switch open three times within two hours of operation, the UCB will lock-out the compressor and flash a code (see Table 36).

LOW-PRESSURE LIMIT SWITCH

The low-pressure limit switch is not monitored during the initial 30 seconds of a cooling system's operation.

For the following 30 seconds, the UCB will monitor the low-pressure switch to ensure it closes. If the low-pressure switch fails to close after the 30-second monitoring phase, the UCB will de-energize the compressor, initiate the ASCD, and stop the condenser fan.

Once the low-pressure switch has been proven (closed during the 30-second monitor period described above), the UCB will monitor the low-pressure limit switch for any openings. If the low-pressure switch opens for greater than 5 seconds, the UCB will de-energize the compressor, initiate the ASCD, and stop the condenser fan.

If the call for cooling is still present at the conclusion of the ASCD, the UCB will re-energize the compressor.

Should a low-pressure switch open three times within one hour of operation, the UCB will lock-out the compressor and flash a code (Table 36).

FREEZESTAT

During cooling operation, if a freezestat opens, the UCB will de-energize the compressor, initiate the ASCD, and stop the condenser fan. If the call for cooling is still present at the conclusion of the ASCD, the UCB will re-energize the compressor.

Should a freezestat open three times within two hours of operation, the UCB will lock-out the compressor and flash a code (Table 36).

LOW AMBIENT COOLING

To determine when to operate in low ambient mode, the UCB has a pair of terminals connected to a temperature-activated switch set at 45ºF. When the low ambient switch is closed and the thermostat is calling for cooling, the UCB will operate in the low ambient mode.

Low ambient mode operates the compressors in this manner: 10 minutes on, 5 minutes off. The indoor blower is operated throughout the cycle. The 5-minute off period is necessary to defrost the indoor coil.

Low ambient mode always begins with compressor operation. Compressor minimum run time may extend the minutes of compressor operation. The defrost cycle will begin immediately following the elapse of the minimum run time.

When operating in low ambient mode, the UCB will not lockout the compressor due to a freezestat trip. However, a freezestat trip will de-energize the compressor. If the call for cooling is still present at the end of the ASCD and the freezestat has closed, the unit will resume operation.

SAFETY CONTROLS

The unit control board monitors the following inputs for the cooling system:

1. A suction line freezestat to protect against low evaporator temperatures due to a low airflow or a low return air temperature, (opens at 26 ± 5 °F and resets at 38 ± 5°F).
2. A high-pressure switch to protect against excessive discharge pressures due to a blocked condenser coil or a condenser motor failure, (opens at 380 ± 10 psig and resets at 300 ± 10 psig).
3. A low-pressure switch to protect against loss of refrigerant charge, (opens at 7 ± 3 psig and resets at 22 ± 5 psig).

The above pressure switches are hard-soldered to the unit. The refrigeration system is monitored and controlled. On any fault, the system will be affected by any safety/preventive action.

The unit control board monitors the temperature limit switch of electric heat units and the temperature limit switch and the gas valve of gas furnace units.

COMPRESSOR PROTECTION

The compressor also has inherent (internal) protection. If there is an abnormal temperature rise in a compressor, the protector will open to shut down the compressor. The UCB incorporates features to minimize compressor wear and damage. An anti-short cycle delay (ASCD) is utilized to prevent operation of a compressor too soon after its previous run. Additionally, a minimum run time is imposed any time a compressor is energized.

The ASCD is initiated on unit start-up and on any compressor reset or lock-out.

FLASH CODES

The UCB will initiate a flash code associated with errors within the system. Refer to UNIT CONTROL BOARD FLASH CODES Table 36.

RESET

Remove the call for cooling, by raising thermostat setting higher than the conditioned space temperature. This resets any pressure or freezestat flash codes.

ELECTRIC HEATING SEQUENCE OF OPERATIONS

The following sequence describes the operation of the electric heat section.

Single-stage heating (applies only to 5, 7 & 10 kW 230V heaters and to 7, 10, & 15 kW 460V and 575V heaters. All other heaters MUST use a two-stage thermostat):

a. Upon a call for heat by the thermostat, the heater sequencer (1S) will be energized. After completing the specified fan on delay for heating, the UCB will energize the blower motor.

b. The thermostat will cycle the electric heat to satisfy the heating requirements of the conditioned space.

Two-stage heating (applies only to 15, 20 and 30 kW 230V heaters and 20 and 30 kW heater 460V and 575V heaters.):

a. Upon a call for first-stage heat by the thermostat, the heater sequencer (1S) (15, 20, 30 kW 230 volt) and contactor (2M) (20, 30 kW 460 and 575 volt) will be energized. After completing the specified fan on delay for heating, the UCB will energize the blower motor.

   If the second stage of heat is required, heater sequencer (2S) (12, 20, 30 kW 230 volt) or contactor (3M) (20, 30 kW 460 and 575 volt) will be energized. After completing the specified fan on delay for heating, the UCB will energize the blower motor.

b. The thermostat will cycle the electric heat to satisfy the heating requirements of the conditioned space.

SAFETY CONTROLS

The control circuit includes the following safety controls:

1. Temperature Limit Switch (TLS) - This control is located inside the heater compartment and is set to open at the temperature indicated in the Electric Heat Limit Control Setting Table 28. It resets automatically. The limit switch operates when a high temperature condition, caused by inadequate supply air flow occurs, thus shutting down the heater and energizing the blower.

TABLE 28: ELECTRIC HEAT LIMIT CONTROL SETTING

VOLTAGE	kW	TEMPERATURE LIMIT SWITCH	Open Temp °F
230-1-60	5	1	140
	7	1,3	140
	10	1,2,3	140
	15	2,4,6	140
	20	1,2,3,4,5	140
		6	150
	30	1,2,3,4,5,6	150
230-3-60	5	1,2,3	140
	7	1,2,3	140
	10	1,2,3	150
	15	2,4,6	140
	20	1,2,3,4,5,6	150
	30	1,3,5	160
		2,4,6	150
460-3-60	7	2,4,6	140
	10	2,4,6	140
	15	2,4,6	140
	20	3	160
	30	3	150
575-3-60	10	2,4,6	140
	15	2,4,6	140
	20	5	160
	30	5	150

RESET

Remove the call for heating by lowering the thermostat setting lower than the conditioned space temperature. This resets any flash codes.

HEAT ANTICIPATOR SETPOINTS

It is important that the anticipator setpoint be correct. Too high of a setting will result in longer heat cycles and a greater temperature swing in the conditioned space. Reducing the value below the correct setpoint will give shorter “ON” cycles and may result in the lowering of the temperature within the conditioned space. Refer to Table 29 for the required heat anticipator setting.

TABLE 29: ELECTRIC HEAT ANTICIPATOR SETPOINTS

HEATER KW	VOLTAGE	SETTING, AMPS	
		TH1	TH2
5	230-3-60	0.35	-
7		0.35	-
10		0.35	-
15		0.35	0.19
20		0.35	0.38
30		0.35	0.38
7	460-3-60	0.35	-
10		0.35	-
15		0.35	-
20		0.37	0.29
30		0.37	0.29
10	575-3-60	0.35	-
15		0.35	-
20		0.37	0.29
30		0.37	0.29

GAS HEATING SEQUENCE OF OPERATIONS (SINGLE STAGE)

When the thermostat calls for heating, the low-voltage control circuit from “R” to “W1” and “G” is completed, through the UCB. The heat relay “RW1” is energized. The “RW1-2” contacts close energizing the draft motor control (DMC). The draft motor control contacts close and start the draft motor. As the speed of the draft motor reaches approximately 2500 RPM, the centrifugal switch contact, located on the end of the draft motor shaft, closes to power the ignition module (IC), through the “RW1-1” contacts.

Ignition module “IC” will immediately start the igniter sparking and will open the redundant valve located inside the main gas valve “GV” to allow a flow of gas to the carryover tube. Only after the pilot flame has been ignited and the presence of pilot flame detected at the “IC” by a signal sent back through the flame sensor is sparking terminated and the main gas valve opened.

Gas flows into each of the main burners and is ignited from the carryover tube flame.

After completing the specified fan on delay for heating, the UCB will energize the blower motor.

If “IC” fails to detect a pilot flame, it will continue to try for a maximum of 85 seconds to ignite the pilot tube. If the pilot flame is not detected, then “IC” will lock out furnace operation for five minutes or until 24V power is removed from the module either at the unit or by resetting the room thermostat.

When the thermostat satisfies de-energizing the “RW1”, thus opening the gas valve. The blower motor will continue to run after the furnace is shut down until the specified fan off delay for heating has been satisfied. The UCB will de-energize the blower motor.

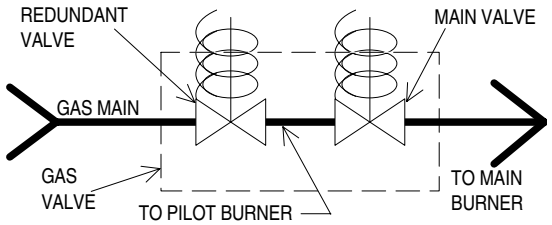


FIGURE 18 - GAS VALVE PIPING

When the thermostat calls for the first stage of heating, the low-voltage control circuit from “R” to “W1” is completed. A call for heat passes through the UCB to the ignition control board (ICB). The UCB monitors the “W1” call and acts upon any call for heat. Once voltage has been sensed at “W1”, the UCB will initiate the fan on delay for heating, energizing the indoor blower after the specified delay has elapsed.

When the thermostat has been satisfied, heating calls are ceased. The GV is immediately de-energized. The blower is de-energized after the fan off delay for heating has elapsed. The draft motor performs a 25-second post purge.

GAS HEATING SEQUENCE OF OPERATION (2 STAGE)

When there is a W1 call for heat, the heat relay is energized by the unit control board. The heat relay contacts immediately close energizing the ignition control board. The ignition control board checks the state of the limits and the centrifugal switch. If they are in the expected state, then the draft motor contact on the ignition control board closes energizing the draft motor. As the speed of the draft motor reaches approximately 2500 rpm, the centrifugal switch located on the end of the draft motor shaft closes and the ignition control board starts a 15 second pre-purge period. After the pre-purge period the ignition control board will simultaneously start the igniter sparking and open the pilot gas valve to allow flow of gas to the pilot burner. After the pilot flame is sensed by the flame sensor the igniter sparking ceases. After the pilot flame stability is proven the ignition control board applies power to the main gas valve for full fire operation. Gas flows into each of the main burners and is ignited from the pilot burner flame. After completing the specified fan on delay for heating, the unit control board will energize the blower motor. One minute after main burner ignition the ignition con-

trol board will reduce the manifold pressure and draft motor speed for low fire operation.

When there is a W2 call for heat, the sequence above is the same except for the reduction to low fire operation after one minute. If a W2 call for heat comes after a W1 ignition sequence is started, then the ignition control either finishes the ignition sequence and continues in the full fire operation or immediately calls for full fire operation.

An automatic 2 stage operation feature is available for use with a single stage thermostat. To activate the automatic 2 stage feature install a jumper between R and W2 on the terminal strip of the unit control board. The ignition control board interprets the continuous 24V power on W2 terminal as automatic 2 stage operation. Therefore, when it receives a call for heat from a single stage thermostat it will start the automatic 2 stage operation. Upon receiving a call for heat signal the ignition control board will sequence the same as a W1 only call for heat above for 10 minutes. After 10 minutes, the ignition control board will move to full firing rate until the call for heat is satisfied. Each time a call for heat is received the ignition control board will go through this same sequence.

When the call for heat is satisfied, the unit control board de-energizes heat relay which signals the ignition control board to close both the main and pilot valves. The unit control board will de-energize the blower motor after the selected time and the ignition control board will de-energize the draft motor after a specific time.

GAS HEATING OPERATION ERRORS

TEMPERATURE LIMIT

If the UCB senses zero volts from the high temperature limit, the indoor blower motor is immediately energized. When the UCB again senses 24 volts from the temperature limit, the draft motor will perform a 25-second post-purge and the indoor blower will be de-energized following the elapse of the fan off delay for heating.

The temperature limit is monitored at all times.

If the temperature limit opens three times within one hour, it will lock-on the indoor blower motor and a flash code is initiated (See Table 36).

GAS VALVE

The UCB continuously monitors the GV. Any time the UCB senses voltage at the GV without a call for heat for a continuous five-minute period, the UCB will lock-on the indoor blower and a flash code is initiated (Table 36). When voltage is no longer sensed at the GV, the UCB will de-energize the indoor blower following the elapse of the fan off delay for heating.

If voltage has been sensed at the GV for at least 15 seconds during the fan on delay for heating and GV voltage or “W1” is lost, the indoor blower is forced on for the length of the fan off delay for heating.

SAFETY CONTROLS

The unit control board monitors the temperature limit switch and the gas valve of gas furnace units.

The control circuit includes the following safety controls:

1. Limit Control (LS) - This control is located inside the heat exchanger compartment and is set to open at the temperature indicated in the Gas Heat Limit Control Setting Table 30. It resets automatically. The limit switch operates when a high temperature condition, caused by inadequate supply air flow occurs, thus shutting down the ignition control and closing the main gas valve and energizing the blower.
2. Centrifugal Switch (CS) - If the draft motor should fail, the centrifugal switch attached to the shaft of the motor prevents the ignition control and gas valve from being energized.
3. Redundant Gas Valve - This valve is an integral part of the main gas valve and is located up stream of the main gas valve. Should the main gas valve fail in the open position, the redundant valve serves as a back-up and shuts off the flow of gas.
4. Flame Sensor Rod / 100% Ignition Control Lock-Out - The flame rods and controls are located per Proper Flame Adjustment Figure 21. If an ignition control fails to detect a signal from the flame sensor indicating the pilot flame is properly ignited, then the main gas valve will not open. It will continue to try and ignite the pilot for a maximum of 85 seconds, then if the pilot flame is not detected, the ignition control will lock out furnace operation until 24V power is removed from the module either at the unit or by resetting the room thermostat.
5. Rollout Switch (RS) - This switch is located in the burner vestibule. In the event of a sustained main burner flame rollout, it shuts off the ignition control and closes the main gas valve.

NOTE: The power must be removed from the iginition control to reset after a rollout switch trip.

6. Auxiliary limit switch (AUX) - This control is located inside the heat exchanger compartment and is set

to open at 190°F. It is a manual reset switch. If AUX trips, then the primary limit has not functioned correctly. Replace the primary limit.

TABLE 30: SINGLE STAGE GAS HEAT LIMIT CONTROL SETTING

Units (Tons)	Capacity, MBH		Limit Control Opens, ºF
	Input	Output	
3	50	40	165
4	75	60	165
3	100	80	165
4	125	100	165
5	100	80	165
5	125	100	165

TABLE 31: 2 STAGE GAS HEAT LIMIT CONTROL SETTING

Units (Tons)	Input MBH		Output MBH		Limit Control Opens, ºF
	1st Stage	2nd Stage	1st Stage	2nd Stage	
3	45	75	36	61	240
3	69	115	55	92	185
4	45	75	36	61	240
4	75	125	60	101	210
5	45	75	36	61	210
5	75	125	60	101	210

FLASH CODES

The UCB will initiate a flash code associated with errors within the system. Refer to UNIT CONTROL BOARD FLASH CODES Table 36.

RESETS

Remove the call for heating by lowering the thermostat setting lower than the conditioned space temperature. This resets any flash codes.

HEAT ANTICIPATOR SETPOINTS

It is important that the anticipator setpoint be correct. Too high of a setting will result in longer heat cycles and a greater temperature swing in the conditioned space. Reducing the value below the correct setpoint will give shorter “ON” cycles and may result in the lowering of the temperature within the conditioned space.

TABLE 32: GAS HEAT ANTICIPATOR SETPOINTS

Gas Valve	Anticipator Setpoint
Honeywell VR8204M	0.60 amp
White-Rodgers 36E36	0.54 amp

START-UP (COOLING)

PRESTART CHECK LIST

After installation has been completed:

1. Check the electrical supply voltage being supplied. Be sure that it is the same as listed on the unit nameplate.
2. Set the room thermostat to the off position.
3. Turn unit electrical power on.
4. Set the room thermostat fan switch to on.
5. Check indoor blower rotation.
   - If blower rotation is in the wrong direction. Refer to Phasing Section in general information section.
   - Check blower drive belt tension.
6. Check the unit supply air (CFM). See “CHECKING SUPPLY AIR CFM” on page 40.
7. Measure evaporator fan motor's amp draw.
8. Set the room thermostat fan switch to off.
9. Turn unit electrical power off.

OPERATING INSTRUCTIONS

1. Turn unit electrical power on.
2. Set the room thermostat setting to lower than the room temperature.
3. First stage compressors will energize after the built-in time delay (five minutes).
4. The second stage of the thermostat will energize second stage compressor if needed.

POST START CHECK LIST

1. Verify proper system pressures for both circuits.
2. Measure the temperature drop across the evaporator coil.
3. Measure the system Amperage draw across all legs of 3 phase power wires.
4. Measure the condenser fan amp draw.

SHUT DOWN

1. Set the thermostat to highest temperature setting.
2. Turn off the electrical power to the unit.

START-UP (GAS HEAT)

PRE-START CHECK LIST

Complete the following checks before starting the unit.

1. Check the type of gas being supplied. Be sure that it is the same as listed on the unit nameplate.
2. Make sure that the vent and combustion air hoods have been properly installed.

OPERATING INSTRUCTIONS

⚠ CAUTION

This furnace is equipped with an intermittent pilot and automatic re-ignition system. DO NOT attempt to manually light the pilot.

TO LIGHT PILOT AND MAIN BURNERS:

1. Turn “off” electric power to unit.
2. Turn room thermostat to lowest setting.
3. Turn gas valve knob or switch to “on” position.
4. Turn “on” electric power to unit.
5. Set room thermostat to desired temperature. (If thermostat “set” temperature is above room temperature, pilot burner ignition will occur and, after an interval to prove pilot flame, main burners will ignite).

TO SHUT DOWN:

1. Turn “off” electric power to unit.
2. Depress knob of gas valve while turning to “off” position or position the switch to the “off” position.

POST-START CHECK LIST (GAS)

After the entire control circuit has been energized and the heating section is operating, make the following checks:

1. Check for gas leaks in the unit piping as well as the supply piping.

⚠WARNING

FIRE OR EXPLOSION HAZARD

Failure to follow the safety warning exactly could result in serious injury, death or property damage.

Never test for gas leaks with an open flame. use a commercially available soap solution made specifically for the detection of leaks to check all connections. A fire or explosion may result causing property damage, personal injury or loss of life.

2. Check for correct manifold gas pressures. See “Checking Gas Input” on page 50.
3. Check the supply gas pressure. It must be within the limits shown on rating nameplate. Supply pressure should be checked with all gas appliances in the building at full fire. At no time should the standby gas line pressure exceed 13", nor the operating pressure drop below 5.0" for natural gas units. If gas pressure is outside these limits, contact the local gas utility for corrective action.

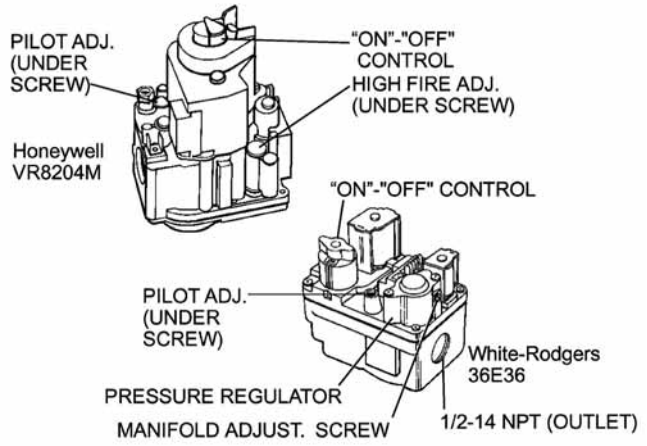


FIGURE 19 - TYPICAL SINGLE STAGE GAS VALVES

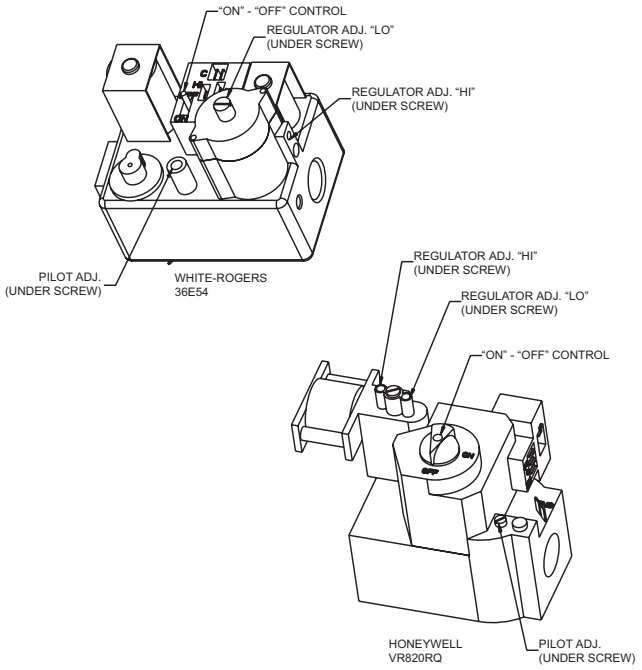

"ON" - "OFF" CONTROL
REGULATOR ADJ. "LO" (UNDER SCREW)
REGULATOR ADJ. "HI" (UNDER SCREW)
PILOT ADJ. (UNDER SCREW)
WHITE-ROGERS 36E54
REGULATOR ADJ. "HI" (UNDER SCREW)
REGULATOR ADJ. "LO" (UNDER SCREW)
"ON" - "OFF" CONTROL
HONEYWELL VR820RQ
PILOT ADJ. (UNDER SCREW)

FIGURE 20 - TYPICAL 2 STAGE GAS VALVES

MANIFOLD GAS PRESSURE ADJUSTMENT

Adjustments to the high-fire and low-fire (2 stage) gas flow may be made by turning the pressure regulator adjusting screws on the automatic gas valve.

Adjust as follows:

1. Remove the adjustment screw cap(s) on the regulator.
2. To decrease the gas pressure, turn the adjusting screw counterclockwise.
3. To increase the gas pressure, turn the adjusting screw clockwise.
4. Replace adjustment screw caps.

NOTE: The factory set high-fire manifold pressure for these furnaces is 3.50 IWG. The actual manifold pressure depends on the local fuel heating value.

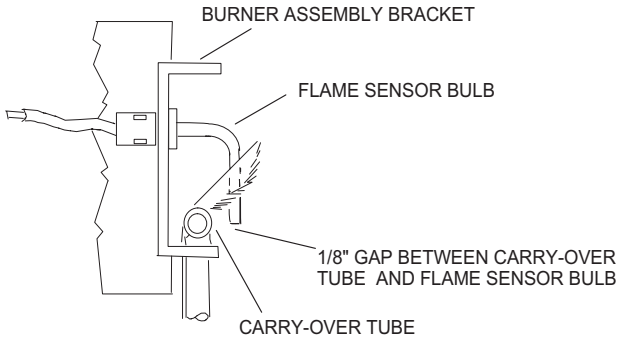


FIGURE 21 - PROPER FLAME ADJUSTMENT

PILOT CHECKOUT

The pilot flame should envelope the end of the flame sensor. To adjust pilot flame, (1) remove pilot adjustment cover screw, (2) increase or decrease the clearance for air to the desired level, (3) be sure to replace cover screw after adjustment to prevent possible gas leakage.

Put the system into operation and observe through complete cycle to be sure all controls function properly.

BURNER INSTRUCTIONS

To check or change burners, pilot or orifices, CLOSE MAIN MANUAL SHUT-OFF VALVE AND SHUT OFF ALL ELECTRIC POWER TO THE UNIT.

1. Remove the screws holding either end of the manifold to the burner supports.
2. Open the union fitting in the gas supply line just upstream of the unit gas valve and downstream from the main manual shut-off valve.
3. Remove the gas piping closure panel.
4. Disconnect wiring to the gas valves and spark ignitors. Remove the manifold-burner gas valve assembly by lifting up and pulling back.

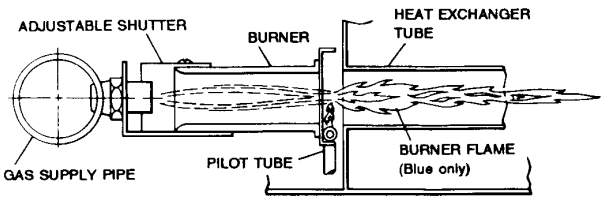


FIGURE 22 - TYPICAL FLAME APPEARANCE

Burners are now accessible for service.

Reverse the above procedure to replace the assemblies. Make sure that burners are level and seat at the rear of the heat exchanger.

BURNER AIR SHUTTER ADJUSTMENT

Adjust burner shutters so no yellow flame is observed in the heat exchanger tubes.

CHECKING GAS INPUT

NATURAL GAS

1. Turn off all other gas appliances connected to the gas meter.

2. With the furnace turned on, measure the time needed for one revolution of the hand on the smallest dial on the meter. A typical gas meter usually has a 1/2 or a 1 cubic foot test dial.

3. Using the number of seconds for each revolution and the size of the test dial increment, find the cubic feet of gas consumed per hour from the Gas Rate - Cubic Feet Per Hour (Table 33).

If the actual input is not within 5% of the furnace rating (with allowance being made for the permissible range of the regulator setting), replace the orifice spuds with spuds of the proper size.

NOTE: To find the Btu input, multiply the number of cubic feet of gas consumed per hour by the Btu content of the gas in your particular locality (contact your gas company for this information - it varies widely from city to city.)

TABLE 33: GAS RATE - CUBIC FEET PER HOUR[1]

Seconds for one rev.	Size of Test Dial	
	1/2 cu. ft.	1 cu. ft.
10	180	360
12	150	300
14	129	257
16	113	225
18	100	200
20	90	180
22	82	164
24	75	150
26	69	138
28	64	129
30	60	120
32	56	113
34	53	106
36	50	100
38	47	95
40	45	90
42	43	86
44	41	82
46	39	78
48	37	75
50	36	72
52	35	69
54	34	67
56	32	64
58	31	62
60	30	60

1. By actual measurement, it takes 38 seconds for the hand on the 1-cubic foot dial to make a revolution with a 100,000 Btuh furnace running. Using this information, located 38 seconds in the first column in the table above. Read across to the column headed “1 Cubic Foot”, where you will see that 95 cubic feet of gas per hour are consumed by the furnace at that rate. Multiply 95 X 1050 (the Btu rating of the gas obtained from the local gas company). The result is 99,750 Btuh, which is close to the 100,000 Btuh rating of the furnace.

ADJUSTMENT OF TEMPERATURE RISE

The temperature rise (or temperature difference between the return air and the heated air from the furnace) must lie within the range shown on the rating plate and the data in the Gas Heat Application Table 4.

$$CFM = \frac{\text{Btuh Input x } 0.8}{108 \times {}^{\circ}F \text{ Temp. Rise}}$$

After the temperature rise has been determined, the cfm can be calculated as follows:

After about 20 minutes of operation, determine the furnace temperature rise. Take readings of both the return air and the heated air in the ducts (about six feet from the furnace) where they will not be affected by radiant heat. Increase the blower cfm to decrease the temperature rise; decrease the blower cfm to increase the rise. Refer to the Blower Motor and Drive Data Table 26.

TROUBLESHOOTING

COOLING TROUBLESHOOTING GUIDE

⚠WARNING

Troubleshooting of components may require opening the electrical control box with the power connected to the unit. **Use extreme care when working with live circuits!** Check the unit nameplate for the correct line voltage and set the voltmeter to the correct range before making any connections with line terminals.

Shut off all electric power to the unit prior to any of the following maintenance procedures to prevent personal injury.

⚠ CAUTION

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation, which could cause injury to person and/or damage unit components. Verify proper operation after servicing.

On calls for cooling, if the compressors are operating but the supply air blower motor does not energize after a short delay (the room thermostat fan switch is in the “AUTO” position).

1. Turn the thermostat fan switch to the ON position. If the supply air blower motor does not energize, go to Step 3.
2. If the blower motor runs with the fan switch in the ON position but will not run after the compressor has energized when the fan switch is in the AUTO position, check the room thermostat for contact between R and G in the AUTO position during calls for cooling.
3. If the supply air blower motor does not energize when the fan switch is set to ON, check that line voltage is being supplied to the contacts of the M2, contactor, and that the contactor is pulled in. Check for loose wiring between the contactor and the supply air blower motor.
4. If M2 is pulled in and voltage is supplied to M2, lightly touch the supply air blower motor housing. If it is hot, the motor may be off on internal protection. Cancel any thermostat calls and set the fan switch to AUTO. Wait for the internal overload to reset. Test again when cool.
5. If M2 is not pulled in, check for 24 volts at the M2 coil. If 24 volts are present at M2 but M2 is not pulled in, replace the contactor.
6. Failing the above, if there is line voltage supplied at M2, M2 is pulled in, and the supply air blower motor still does not operate, replace the motor.
7. If 24 volts is not present at M2, check that 24 volts is present at the UCB supply air blower motor terminal, “FAN”. If 24 volts is present at the FAN, check for loose wiring between the UCB and M2.
8. If 24 volts is not present at the “FAN” terminal, check for 24 volts from the room thermostat. If 24 volts are not present from the room thermostat, check for the following:
    a. Proper operation of the room thermostat (contact between R and G with the fan switch in the ON position and in the AUTO position during operation calls).
    b. Proper wiring between the room thermostat and the UCB.
    c. Loose wiring from the room thermostat to the UCB.
9. If 24 volts is present at the room thermostat but not at the UCB, check for proper wiring between the thermostat and the UCB, i.e. that the thermostat G terminal is connected to the G terminal of the UCB, and for loose wiring.
10. If the thermostat and UCB are properly wired, replace the UCB.

On a call for cooling, the supply air blower motor is operating but the compressor is not (the room thermostat fan switch is in the “AUTO” position).

1. If installed, check the position of the economizer blades. If the blades are open, the economizer is providing free cooling and the compressors will not immediately operate. If both stages of cooling are requested simultaneously and the economizer provides free cooling, following a short delay the compressor will be energized unless it is locked out, unless this option has been disabled through computer communications.
2. If no economizer is installed or the economizer is not opening to provide free cooling and the compressor does not energize on a call for cooling, check for line voltage at the compressor contactor, M1, and that the contactor is pulled in. Check for loose wiring between the contactor and the compressor.
3. If M1 is pulled in and voltage is supplied at M1, lightly touch the compressor housing. If it is hot, the compressor may be off on inherent protection. Cancel any calls for cooling and wait for the internal overload to reset. Test again when cool.
4. If M1 is not pulled in, check for 24 volts at the M1 coil. If 24 volts are present and M1 is not pulled in, replace the contactor.
5. Failing the above, if voltage is supplied at M1, M1 is pulled in, and the compressor still does not operate, replace the compressor.
6. If 24 volts is not present at M1, check for 24 volts at the UCB terminal, C1. If 24 volts is present, check for loose wiring between C1 and the compressor contactor.
7. If 24 volts is not present at the C1 terminal, check for 24 volts from the room thermostat at the UCB Y1 terminal. If 24 volts is not present from the room thermostat, check for the following:
   a. 24 volts at the thermostat Y1 terminal
   b. Proper wiring between the room thermostat and the UCB, i.e. Y1 to Y1, Y2 to Y2
   c. Loose wiring from the room thermostat to the UCB.
8. If 24 volts is present at the UCB Y1 terminal, the compressor may be out due to an open high-pressure switch, low-pressure switch, or freezestat. Check for 24 volts at the HPS1, LPS1, and FS1 terminals of the UCB. If a switch has opened, there should be a voltage potential between the UCB terminals, e.g. if LPS1 has opened, there will be a 24-volt potential between the LPS1 terminals.
9. If 24 volts is present at the UCB Y1 terminal and none of the protection switches have opened, the UCB may have locked out the compressor for repeat trips. The UCB should be flashing an alarm code. If not, press and release the ALARMS button on the UCB. The UCB will flash the last five alarms on the LED. If the compressor is locked out, cancel any call for cooling. This will reset any compressor lock outs.

NOTE: While the above step will reset any lockouts, the compressor may be held off for the ASCD. See the next step.

10. If 24 volts is present at the UCB Y1 terminal and none of the switches are open and the compressor is not locked out, the UCB may have the compressor in an ASCD. Check the LED for an indication of an ASCD cycle. The ASCD should time out within 5 minutes. Press and release the TEST button to reset all ASCDs.
11. If 24 volts is present at the UCB Y1 terminal and the compressor is not out due to a protective switch trip, repeat trip lock out, or ASCD, the economizer terminals of the UCB may be improperly wired. Check for 24 volts at the Y1 “OUT” terminal of the UCB. If 24 volts is present, trace the wiring from Y1 “OUT” for incorrect wiring. If 24 volts is not present at the Y1 “OUT” terminal, the UCB must be replaced.
12. *For units without economizers*: If 24 volts is present at the Y1 OUT terminal, check for 24 volts at the Y1 “ECON” terminal. If 24 volts is not present, check for loose wiring from the Y1 “OUT” terminal to the Mate-N-Lock plug, the jumper in the Mate-N-Lock plug, and in the wiring from the Mate-N-Lock plug to the Y1 “ECON” terminal.
13. *For units with economizers*: If 24 volts is present at the Y1 “OUT” terminal, check for 24 volts at the Y1 “ECON” terminal. If 24 volts is not present, check for loose wiring from the Y1 “OUT” terminal to the Mate-N-Lock plug, a poor connection between the UCB and economizer Mate-N-Lock plugs, loose wiring from the Mate-N-Lock plug to the economizer, back to the Mate-N-Lock plug, and from the Mate-N-Lock plug to the Y1 “ECON” terminal. If nothing is found, the economizer actuator may have faulted and is failing to return the 24-volt “call”

to the Y1 “ECON” terminal even though the economizer is not providing free cooling. To test, disconnect the Mate-N-Locks and jumper between the WHITE and YELLOW wires of the UCB’s Mate-N-Lock plug. If the compressor energizes, there is a fault in the economizer wiring or actuator.

14. The UCB can be programmed to lock out compressor operation during free cooling and in low ambient conditions. These options are not enabled by default. Local distributors can test the UCB for this programming.

15. If none of the above correct the error, replace the UCB.

CHARGING THE UNIT

These units will be charged using the superheat method. Superheat charging data is shown in Tables 34 and 35. When charging each system, superheat data should be taken at the compressor inlet.

TABLE 34: DJ036 COOLING SUPERHEAT CHARGING TABLE

OUTDOOR TEMP (°F)	SUPERHEAT AT COMPRESSOR SUCTION (°F) AIRFLOW=1200 CFM										
	INDOOR WET BULB TEMPERATURE (°F)										
	55	57	59	61	63	65	67	69	71	73	75
65	32.2	32.6	33.0	33.4	33.8	34.2	34.6	35.4	36.3	36.7	37.1
70	23.3	24.7	26.1	27.5	28.9	30.3	31.7	32.8	33.9	34.5	35.0
75	14.3	16.8	19.2	21.6	24.0	26.4	28.8	30.2	31.6	32.3	32.9
80	5.4	8.8	12.2	15.7	19.1	22.5	25.9	27.6	29.2	30.0	30.9
85	-	-	5.3	9.7	14.2	18.6	23.0	24.9	26.8	27.8	28.8
90	-	-	-	7.6	11.2	14.7	18.3	21.1	23.9	25.4	26.8
95	-	-	-	5.5	8.1	10.8	13.5	17.3	21.0	22.9	24.8
100	-	-	-	-	6.3	8.3	10.3	14.0	17.8	19.7	21.6
105	-	-	-	-	-	5.7	7.0	10.8	14.6	16.5	18.4
110	-	-	-	-	-	-	-	7.6	11.4	13.3	15.2
115	-	-	-	-	-	-	-	-	8.2	10.1	12.0

TABLE 35: DJ048 COOLING SUPERHEAT CHARGING TABLE

OUTDOOR TEMP (°F)	SUPERHEAT AT COMPRESSOR SUCTION (°F) AIRFLOW=1600 CFM										
	INDOOR WET BULB TEMPERATURE (°F)										
	55	57	59	61	63	65	67	69	71	73	75
65	36.9	37.0	37.1	37.2	37.3	37.4	37.5	37.7	37.8	37.9	38.0
70	31.1	31.8	32.5	33.1	33.8	34.5	35.1	35.5	35.9	36.1	36.3
75	25.4	26.6	27.8	29.1	30.3	31.5	32.8	33.4	34.0	34.3	34.6
80	19.6	21.4	23.2	25.0	26.8	28.6	30.4	31.2	32.1	32.5	32.9
85	13.8	16.2	18.6	20.9	23.3	25.6	28.0	29.1	30.2	30.7	31.2
90	6.9	9.5	12.1	14.7	17.3	19.9	22.6	25.1	27.6	28.8	30.1
95	-	-	5.7	8.5	11.4	14.2	17.1	21.0	24.9	26.9	28.9
100	-	-	5.0	7.1	9.3	11.4	13.5	16.6	19.6	21.2	22.7
105	-	-	-	5.8	7.1	8.5	9.9	12.1	14.3	15.4	16.5
110	-	-	-	-	5.0	5.7	6.3	7.6	9.0	9.7	10.3
115	-	-	-	-	-	-	-	-	-	-	-

The DJ060 uses a TXV. Charge the unit to 12°F subcooling.

NORMAL OPERATING PRESSURES

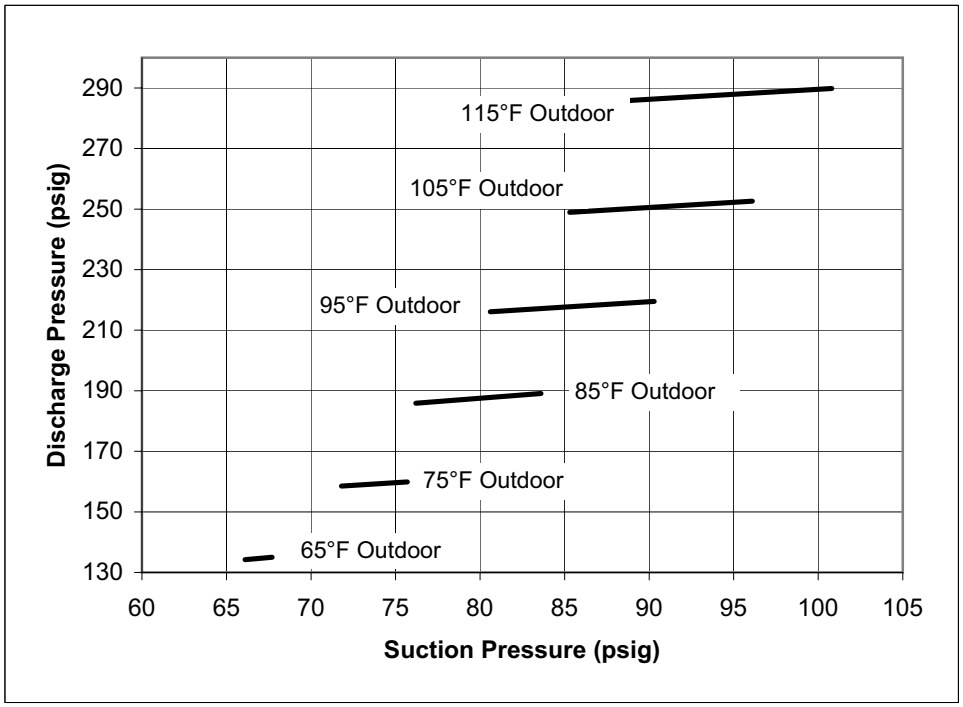


FIGURE 23 - DJ036 OPERATING PRESSURES

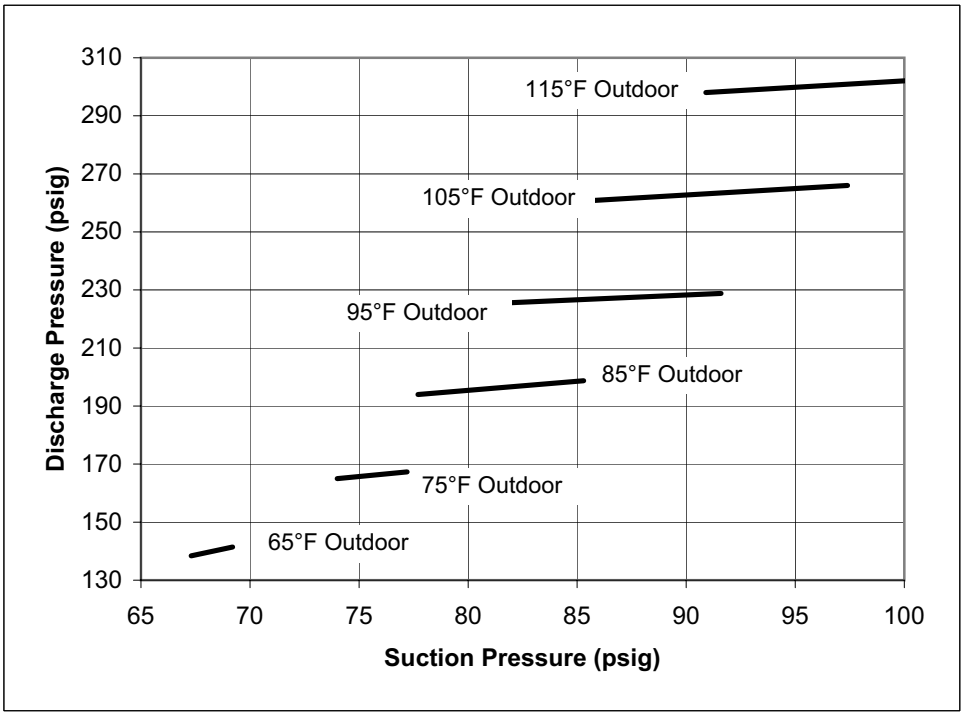


FIGURE 24 - DJ048 OPERATING PRESSURES

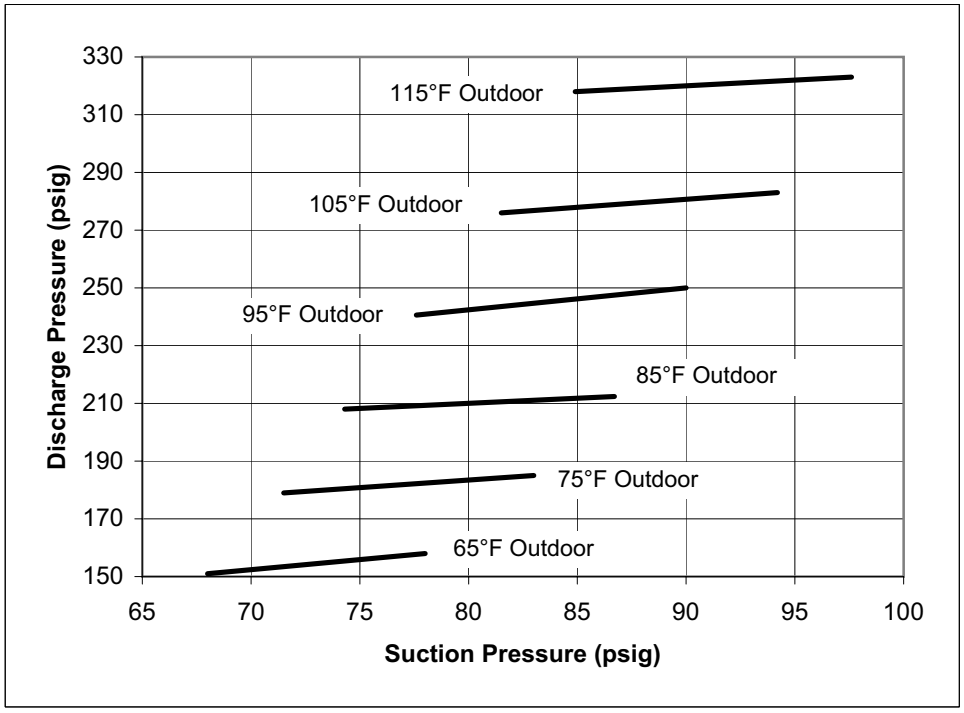


FIGURE 25 - DJ060 OPERATING PRESSURES

GAS HEAT TROUBLESHOOTING GUIDE

⚠WARNING

Troubleshooting of components may require opening the electrical control box with the power connected to the unit. **Use extreme care when working with live circuits!** Check the unit nameplate for the correct line voltage and set the voltmeter to the correct range before making any connections with line terminals.

When not necessary, shut off all electric power to the unit prior to any of the following maintenance procedures so as to prevent personal injury.

⚠ CAUTION

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation, which could cause injury to person and/or damage unit components. Verify proper operation after servicing.

NOTE: To find the Btu input, multiply the number of cubic feet of gas consumed per hour by the Btu content of the gas in your particular locality (contact your gas company for this information - it varies widely from city to city.).

⚠WARNING

The furnace may shut down on a high temperature condition during the procedure. If this occurs, the UCB energize the supply air blower motor until the high temperature limit has reset. Caution should be used at all times as the supply air blower may energize regardless of the room thermostat fan switch position.

On calls for heating, the draft motor operates and the furnace lights but the supply air blower motor does not energize after a short delay (the room thermostat fan switch is in “AUTO” position).

1. Place the thermostat fan switch in the “ON” position. If the supply air blower motor energizes, go to Step 10.
2. If the supply air blower motor does not energize when the fan switch is set to “ON,” check that line

voltage is being supplied to the contacts of the M2 contactor, and that the contactor is pulled in. Check for loose wiring between the contactor and the supply air blower motor.

3. If M2 is pulled in and voltage is supplied at M2, lightly touch the supply air blower motor housing. If it is hot, the motor may be off on inherent protection. Cancel any thermostat calls and set the fan switch to “AUTO”, wait for the internal overload to reset. Test again when cool.
4. If M2 is not pulled in, check for 24 volts at the M2 coil. If 24 volts is present at M2 but M2 is not pulled in, replace the contactor.
5. Failing the above, if there is line voltage supplied at M2, M2 is pulled in, and the supply air blower motor still does not operate, replace the motor.
6. If 24 volts is not present at M2, check that 24 volts is present at the supply air blower motor terminal on the UCB. If 24 volts is present at the UCB terminal, check for loose wiring between the UCB and M2.
7. If 24 volts is not present at the UCB supply air blower motor terminal, check for 24 volts from the room thermostat. If 24 volts is not present from the room thermostat, check for the following:
   a. Proper operation of the room thermostat (contact between R and G with the fan switch in the “ON” position and in the “AUTO” position during operation calls).
   b. Proper wiring between the room thermostat and the UCB.
   c. Loose wiring from the room thermostat to the UCB.
8. If 24 volts is present at the room thermostat but not at the UCB, check for proper wiring between the thermostat and the UCB, i.e. that the thermostat G terminal is connected to the G terminal of the UCB, and for loose wiring.
9. If the thermostat and UCB are properly wired, replace the UCB.
10. If the blower motor runs with the fan switch in the “ON” position but does not run shortly after the furnace has ignited when the fan switch is in the “AUTO” position, check the room thermostat for contact between R and G during “W1” calls.

On calls for heating, the supply air blower operates but the draft motor does not (the room thermostat fan switch is in the “AUTO” position).

1. The draft motor has inherent protection. If the motor shell is hot to the touch, wait for the internal overload to reset.
2. If the motor shell is cold with the room thermostat calling for heat, check if 24 volts is present at the room thermostat but not at the UCB, check for proper wiring between the thermostat and the UCB, i.e. that the thermostat “W1” terminal is connected to the “W1” terminal of the UCB, and for loose wiring.
3. Check if the Draft Motor Control (DMC) is not pulled in, check for 24 volts at the DMC terminals “G” and “C”. If 24 volts is present, replace the DMC. If 24 volts is not present, check for a loose 24 volt connection back to terminal “H1” on the UCB.

   On a 2 stage model, the draft motor is a 230 volt motor on all models regardless of unit supply voltage. Verify that terminal "L1" on the ignition control board has a minimum of 187 volts present. If terminal "L1" does not have the minimum voltage present, then check the wiring to the ignition control board on all models and on 460V and 575V models check the transformers ahead of the ignition board. If "L1" does have the minimum voltage present, then verify minimum voltage is present at terminal "IND HIGH" on the ignition control board. If minimum voltage is present at "IND HIGH", then draft motor or its run capacitor is at fault and will require replacement.
4. Check if line voltage is present at the DMC terminals “COM” to “NO”. If the line voltage is present replace the DMC. If line voltage is not present check voltage from terminal “L3” of M1 contactor to terminal “NO” on the DMC, if line voltage is present replace the draft motor.

   On a 2 stage models, if the minimum voltage is present at terminal "L1" and not present at terminal "IND HIGH", then verify that the LED on the ignition control board indicates a heartbeat defined as a constant flashing of the LED. If the led does not flash, then check the 24V continuous power circuit to the ignition control board as well as the common circuit wiring. If a pause is present between any number of flashes then a fault code has been set. At this point, 3 flashes followed by a pause repeated over and over is an indication that the centrifugal switch is stuck in the closed position which can be verified by the presence of 24V between terminals P2-1 and P1-8. In this case the ignition control board will not energize the draft motor for safety reasons. Replace the draft motor

or repair the centrifugal switch in the bottom of the draft motor. If all tests are as expected and the board has constant flashing of the LED, then replace the ignition control board.

The draft motor runs but the furnace does not light and the sparker does not spark.

1. The ignition control (IC) may be locked out due to either a flame roll out or 100% shut off. These safety features are described above. If lock-out has occurred, 24V must be removed from the ignition controls. This is done at the unit or by resetting the room thermostat. After resetting 24V, check for proper furnace operation. If lock-out continues to occur, locate the source of the problem and correct.
2. Check all 24 volt connections from the UCB to and in the gas heat section. Check low voltage connections to the relay (RW1) located in the control box.
3. If the furnace is hot, it may be out on an over-temperature condition, wait for limit reset.
4. If the furnace is cold, check for 24 volts at terminal “5” and “7” of RW1. If 24 volts is present, check the RW1 relay coil terminals “A” and “B”. If 24 volts is found at the coil replace the RW1 relay.
5. If 24 volts is not present at terminals “5” and “7” and the RW1 relay coil is pulled in. Check for 24 volts from terminal “5” to “Ground” on the RW1 relay. 24 volts here indicates that the problem is in the (RS) Roll Out Switch, or the (CS) Centrifugal Switch.

   On two stage models, if 24V is present at terminals "5" and "7" and the RW1 coil is pulled in then check verify that the LED on the ignition control board is constantly flashing. If so, then check wiring between ignition control board and gas valve. If the flashing is broken by a pause, then count the flashes between the pauses to determine the reason for the lockout.

6. With the draft motor running, check for 24 volts at terminal “TH” to “Ground” on the ignition control (IC) where the red lead from the draft motor attaches. If 24 volts is not present, the centrifugal switch (CS) has not closed or has gone bad. Check the line voltage to the unit, if it is correct replace the draft motor. If line voltage is low call the power company.

   On two stage models, if flash code is a 2 then verify that 24V is not present between P2-1 and P1-8. If 24V is not present, then the centrifugal switch has not closed. This could be due to low voltage to the draft motor. Verify that the voltage at terminal "IND HIGH" is a minimum of 187 volts. If it is at least 187 volts, then replace the draft motor or repair the centrifugal switch in the bottom of the draft motor. If the voltage is less than 187 volts, then call the power company.

7. If 24 volts is present at the ignition control, check all control wiring at the igniionr control and the wire to the ignition. Check that the ground wires from the ignitor control, the gas valves and pilot burners are all intact and making good electrical connection. Check to make sure that the ceramic insulator on the pilot ignitor or sensors is not broken or cracked, if all are intact, replace the ignition control IC.

The draft motor runs and the ignitor sparks at the pilot burner but the pilot does not ignite and a gas odor is not detected at the draft motor outlet.

1. Check to make sure gas is being supplied to the unit. Make sure that the gas pressure to the unit is within the proper limits as described in the “POST START CHECK LIST” on page 48 and that the pilot adjust screw is allowing some flow of gas as described in “PILOT CHECKOUT” on page 49.

2. Check all wiring between the ignition control and the gas valve. Check to make sure the ground connections are intact.

3. If the wiring is intact, check for 24 volts across terminals “PV” and “GROUND” on the ignition control. If 24 volts is not present, replace the ignition control.

4. If 24 volts is present, remove the pilot burner and remove the pilot orifice from the pilot burner. The orifice is removed in the direction opposite the flow of gas. Inspect the orifice for obstruction. If it is clear, replace the main gas valve.

The ignitor sparks at the pilot burner but the pilot does not ignite and a gas odor is detected at the draft motor outlet.

1. Adjust the pilot adjust screw on the gas valve as described in “PILOT CHECKOUT” on page 49.

2. Check the supply pressure as described in “POST START CHECK LIST” on page 48. Make adjustments as necessary.

3. Check the pilot orifice and pilot burner for obstruction as described in paragraph above. Clean as needed but the problem should not be the gas valve.

The pilot burner ignites but the ignitor continues to spark and the main burners do not ignite.

1. Make the same checks and adjustment as described in “PILOT CHECKOUT” on page 49.

2. Check the supply pressure as described in “POST START CHECK LIST” on page 48. Make adjustments as necessary.

3. Make sure that the pilot burner is not bent or damaged.

4. Make sure that the ground connections at the pilot burner, gas valve and ignition control are intact. Check the ignitor wire for good electrical connection. If all are intact, replace the ignition control.

The pilot burner lights and the spark stops but the main burners do not light.

1. Check electrical connections between the ignition control and the gas valve. If intact, check for 24 volts across terminals “MV” and “GROUND” terminals. If no voltage detected, replace ignition control. If voltage is present, replace gas valve.

Furnace lights with roll-out or one burner has delayed ignition.

1. Make sure that the pilot burner is aligned properly with the flame sensor as described in “PILOT CHECKOUT” on page 49.

Main burners light but exhibit erratic flame characteristics.

1. Adjust air shutters as described in “BURNER AIR SHUTTER ADJUSTMENT” on page 50.

2. Check the main burner orifices for obstruction and alignment. Removal procedure is described in BURNER INSTRUCTIONS on page 49. Clean or replace burner orifices and burners as needed.

UNIT FLASH CODES

Various flash codes are utilized by the unit control board (UCB) to aid in troubleshooting. Flash codes are distinguished by the short on and off cycle used (approximately 200ms on and 200ms off). To show normal operation, the control board flashes a 1 second on, 1 second off “heartbeat” during normal operation. This is to verify that the UCB is functioning correctly. Do not confuse this with an error flash code. To prevent confusion, a 1-flash, flash code is not used.

Current alarms or active restrictions are flashed on the UCB LED. Pressing and releasing the ALARMS button on the UCB can check the alarm history. The UCB will cycle through the last five (5) alarms, most recent to oldest, separating each alarm flash code by approximately 2 seconds.

In some cases, it may be necessary to “zero” the ASCD for the compressors in order to perform troubleshooting. To reset all ASCDs for one cycle, press and release the UCB TEST button once.

TABLE 36: UNIT CONTROL BOARD FLASH CODES

Flash Code	Description
On Steady	Control Failure - Replace Control
Heart Beat	Normal Operation
1 Flash	Not Applicable
2 Flashes	Control waiting ASCD[1]
3 Flashes	HPS1 - Compressor Lock out
4 Flashes	HPS2 - Compressor Lock out
5 Flashes	LPS1 - Compressor Lock out
6 Flashes	LPS2 - Compressor Lock out
7 Flashes	FS1 - Compressor Lock out
8 Flashes	FS2 - Compressor Lock out
9 Flashes	Ignition Control Locked Out/ Ignition Control Failure / Limit Switch Trip / No Jumper Plug in Heat Section
10 Flashes	Compressors Locked Out On Low Outdoor Air Temperature[1]
11 Flashes	Compressors Locked Out Because The Economizer Is Using Free Cooling[1]
12 Flashes	Fan Overload Switch Trip
13 Flashes	Compressor Held Off Due To Low Voltage[1]
14 Flashes	EEPROM Storage Failure (Control Failure)
OFF	No Power or Control Failure

1. These flash codes do not represent alarms.

TABLE 37: IGNITION CONTROL BOARD FLASH CODES

Flash Code	Description
On Steady	Control Failure - Replace Control
Heart Beat	Normal Operation
1 Flash	Not Applicable
2 Flashes	Pressure / Centrifugal Switch Open with Inducer On
3 Flashes	Pressure / Centrifugal Switch Closed with Inducer Off
4 Flashes	Not Applicable
5 Flashes	Lock Out From Too Many Flame Losses
6 Flashes	High Temperature Switch Open
7 Flashes	Rollout Switch Open
8 Flashes	Flame Present With Gas OFF

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